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TELEPHONE ENGINEER & MANAGEMENT

the telephone industry magazine

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TECHNOLOGY
DEPARTMENT

PREPARING FOR THE RATE CASE, by Jim Morrison

The Directory Cover Problem, by Allan R. Stacey

THE KID LEARNS MORE ABOUT FILTERS, by C. D. Ehinger

All-Numeral Numbering vs. Other Plans, D. A. Perigo

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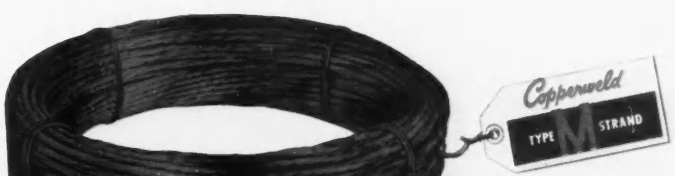

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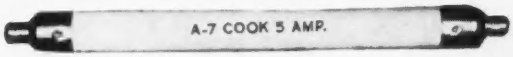

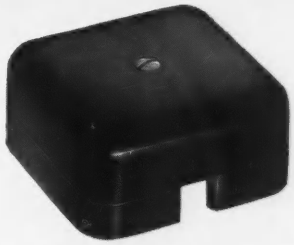

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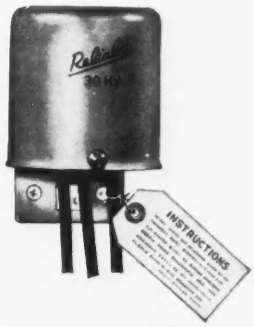

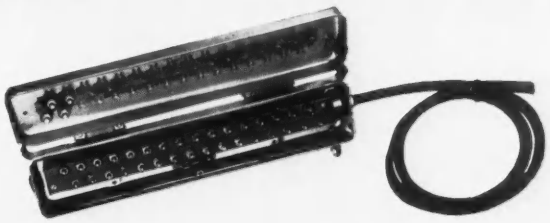

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TELEPHONE ENGINEER & MANAGEMENT

the telephone industry magazine

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The TE&M Front Cover

Certificate presentation highlights graduation exercises for this K-60 Crossbar Switching System training class at Kellogg Switchboard & Supply Co. in Chicago. At a luncheon in honor of the graduates, TED TALMAGE (left), Kellogg's education manager, congratulates (l to r) FREDERICK W. KRUMM, Whiteford Telephone Co., Ottawa Lake, Mich.; JOSE LOPEZ ORTIZ and WILLIAM M. D'NARVARTE, Puerto Rico Telephone Co., Ponce P. R.; GORDAN A. PLOCHER, Watertown Telephone Co., Watertown, Minn.; DAVID A. WOOD, Carroll Telephone Co., Delphi, Ind.; and NORMAN L. GLANDON, Central Iowa Telephone Co., Toledo, Iowa.

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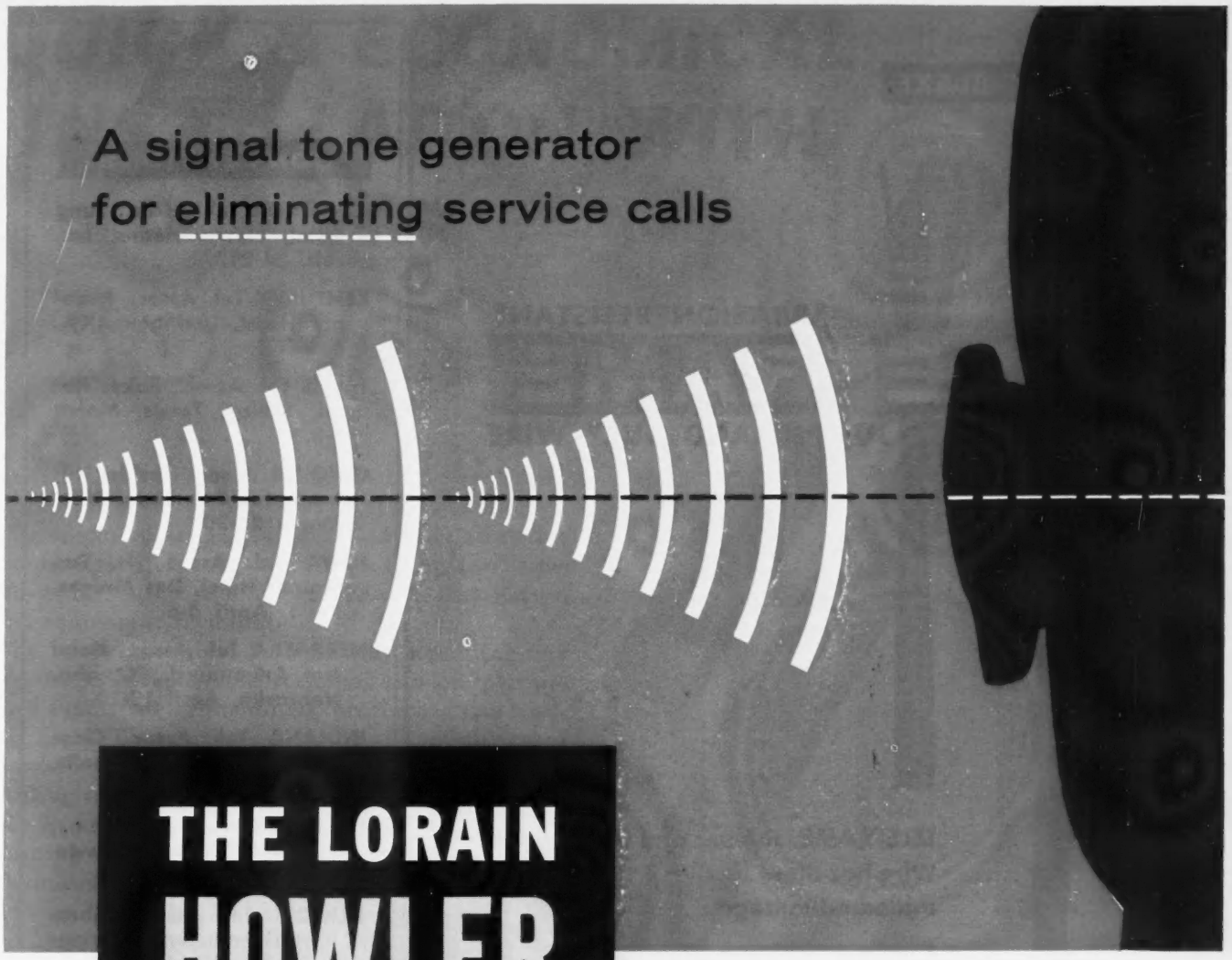

THE LORAIN HOWLER

Write for Bulletin 167A

THE TONE THAT HANGS THE PHONE

The Lorain Howler's unique tone can't go unheard, can't be mistaken for any familiar sound. It begins softly on a high note, gradually declines in pitch while it increases in volume. It covers the full frequency range where both ears and receivers are most sensitive.

SAFE FOR EAR, SAFE FOR EQUIPMENT

The slow increase in signal volume allows plenty of time for removal of the receiver from the ear. And the Howler's distinctive tone can be sent out at a much lower voltage than is customary, protecting against damage to receivers or cable cross-talk.

EASY START, AUTOMATIC STOP

The Howler is plugged into the line at the protector frame or test desk. A push-button or a remote key starts it. A relay automatically stops the Howler and restores the line to service when the receiver is replaced. AC and DC input. Signal output: 0—40 volts, 2.5 watts.

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CONVENTIONS

LOUISIANA Tel. Assoc., Jung Hotel, New Orleans, La., Feb. 24-25.

KENTUCKY Tel. Assoc., Phoenix Hotel, Lexington, Ky., March 1.

TEXAS Tel. Assoc., Baker Hotel, Dallas, Texas, March 7-8.

OHIO Tel. Assoc., Deshler Hilton Hotel, Columbus, Ohio, March 28-30.

IOWA Tel. Assoc., Ft. Des Moines Hotel, Des Moines, Iowa, April 5-6.

NEBRASKA Tel. Assoc., Hotel Not Announced. Omaha, Nebraska, April 19-20.

INDIANA Tel. Assoc., Claypool Hotel, Indianapolis, Indiana, May 4-5.

WISCONSIN Tel. Assoc., Plankinton House, Milwaukee, Wisc., May 10-11.

ILLINOIS Tel. Assoc., Abraham Lincoln Hotel, Springfield, Ill., May 19-20.

KANSAS-MISSOURI, Tel. Associations, Town House, Kansas City, Kans., May 23-24.

PENNSYLVANIA Tel. Assoc., Bedford Springs Hotel, Bedford Springs, Pa., June 6-7.

CALIFORNIA Tel. Assoc., Fairmont Hotel, San Francisco, Calif., June 8-10.

WASHINGTON-OREGON Tel. Associations, Sheraton Portland Hotel, Portland, Ore., June 16-17.

NEW YORK Tel. Assoc., Scaroon Manor, Schroon Lake, N. Y., June 20-22.

ARKANSAS Tel. Assoc., Hermitage Hotel, Hot Springs, Ark., Sept. 12-13.

MICHIGAN Tel. Assoc., Grand Hotel, Mackinac Island, Mich., Sept. 12-13.

NATIONAL CONVENTION, Conrad Hilton Hotel, Chicago, Ill., Oct. 9-12.

QUICK & ECONOMICAL INSTALLATION WITH

COOK

BD Pedestals

Install Cook BD type Pedestals in your buried wire and cable plants to save time and money. The advanced design features, and more accessible termination, protection and loading facilities, allow for easier and faster pedestal installation and equipment termination.

The cover is removed quickly by loosening one screw. The removable terminal bracket permits easy mounting of terminals, protection and loading coils. The spacious interior allows plenty of room for wires and cables, and makes terminating, loading and splicing easier.

BD Pedestals can be ordered with Cook Hi-Fi Loading Coils and 3C protected or unprotected Terminal Blocks to fit your specific requirements.

Complete installation of Cook BD Pedestal No. 521-120 for up to 100 pair, 22 gauge underground plastic cable.

Showing completed No. 521-119 BD Pedestal for up to 18 pair, 22 gauge cable or cable and wire installation.

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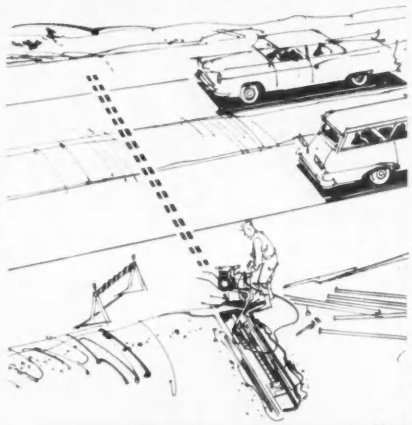
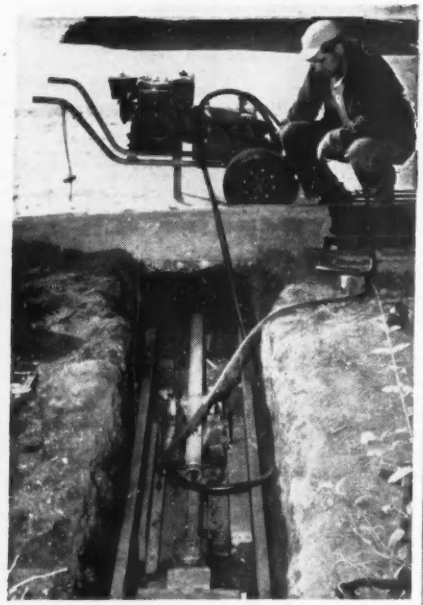
EASY, LOW-COST WAY TO RUN PIPE UNDER STREETS AND WALKS





Greenlee Hydraulic Pipe Pusher

Traffic proceeds as usual when your piping for underground cable crosses under the street this simple timesaving way. Model No. 790 shown pushes ¾" - 4" pipe about two feet per minute with power pump. A small ditch in the parkway accommodates the pipe pusher — streets and walks remain undisturbed, total job time is cut to a fraction. Ask your supplier for details or write for free literature.

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INDUSTRY NEWSLETTER

Fourth USITA Telephone Engineering Conference

RUSSELL J. LOVELAND, chairman of USITA Subcommittee on Engineering Education, has announced that the annual Telephone Engineering Conference sponsored by USITA will be held from July 3 to July 22 at Michigan State University, East Lansing, Mich. As in the three previous programs, 1960 Conference will be directed toward basic concept of "a course designed to help engineers of all communication companies secure a maximum utilization of every construction dollar."

Brochure on 1960 program with application blanks will be mailed to USITA member companies during February. For advance registration or information contact Professor John U. Jeffries, Electrical Engineering Department, Michigan State University, East Lansing, Mich. Following members of USITA Subcommittee on Engineering Education will provide information concerning the program. (1) Russell J. Loveland, Chairman, 300 Montgomery St., San Francisco, Calif.; (2) I. B. Jackson, Director of Engineering, General Tel. & Electronics Corp., 730 Third Ave., New York 17, N.Y.; and (3) E. A. McKee, Jr., Engineering Director, Central Telephone Co., Lincoln, Nebr.

* * *

All-Number Phone Calling For Decatur, Ill.

Announcing that Decatur, Ill., will be first city in territory of Illinois Bell Tel. Co. to have all number calling, with telephone numbers listed in seven numbers instead of familiar two-letter, five-number pattern, Illinois Bell reported good results from preliminary Bell System tests of plan. Indicated from tests are more accurate and faster dialing, reduced misunderstanding of numbers, and billing simplification.

All-number calling is being introduced in other parts of Bell System, it was added. Omaha, Nebr., which now has a two-letter, four-number system, is expected to be first large city in U.S. to have all-number calling, later this year. General Tel. Co. of Indiana has reported that all-number calling was launched at Glenwood and Milroy Feb. 1.

* * *

Fully Electronic Private Tel. Exchange Cut Into Operation

WHAT WAS DESCRIBED as major step forward in telephone technique was taken in Paris Jan. 22, with cutting into service of 240-line fully electronic private telephone exchange at Laboratoire Central de Telecommunications, International Tel. & Tel. Corp.'s French associate research company, which developed the equipment. Exchange's control circuit operates 10,000 times faster than conventional telephone exchanges now in use, ITT reported.

Professor Georges Goudet, general manager of LCT, said first all-electronic exchange to be put into operation in Europe was 20-line exchange designed and constructed by LCT two years ago, and now in use aboard French naval vessel. He emphasized importance of all-electronic telephone switching, and paid tribute to work done by other organizations, "in particular by Bell Telephone Laboratories."

In another development in electronic switching outside U. S., ITT reported experimental electronic exchange is undergoing tests in England at Post

Office research station in London. Exchange is result of research and development project of five British manufacturers — ITT's Standard Telephones & Cables, Ltd., Automatic Telephone & Electric Co., Ltd., Ericsson Telephones, Ltd., General Electric Co., Ltd., and Siemens Edison Swan, Ltd. — working with British Post Office, it was pointed out.

In United States, trial model of electronic central office equipment is scheduled to be put into service at Morris, Ill., in June. About 700 main stations will be served. During period of trial, work will continue on design of production model. Efforts are being directed toward initial shipment of first full production models in 1965.

* * *

Dailey To Serve BDSA

ROBERT E. DAILEY, assistant to the vice pres. and gen. mgr. of *Telecommunications Division* of *Stromberg-Carlson*, was sworn in as assistant to director of Communications Industries Division, Business & Defense Services Administration, U. S. Department of Commerce.

Dailey will serve on loan to government without compensation for six-month period, after which he will become member of National Defense Executive Reserve, which would staff operation of a production agency in event of national emergency.

After service with U. S. Army Counter Intelligence Corps during World War II, Dailey joined Stromberg-Carlson, where he has served in various telecommunications positions encompassing military contract administration, military procurement, long-range planning, and market analysis.

* * *

PCM Transmission Method Being Tested In England

INTERNATIONAL TEL. & TEL. CORP. has reported it is testing in England the transmission of television and telephone signals by means of pulse code modulation (PCM) method developed and patented by ITT. Acceptable live television pictures, as well as telephone calls, have been sent instantaneously more than half mile over the experimental circuit, ITT said. System uses hollow metal "pipes," approximately three inches in diameter.

ITT said current test is believed to be first time TV pictures have been transmitted considerable distance by "pipe" or transmitted by PCM method. Technique provides ultimately for simultaneous transmission of as many as 400 television channels or several hundred thousand telephone conversations.

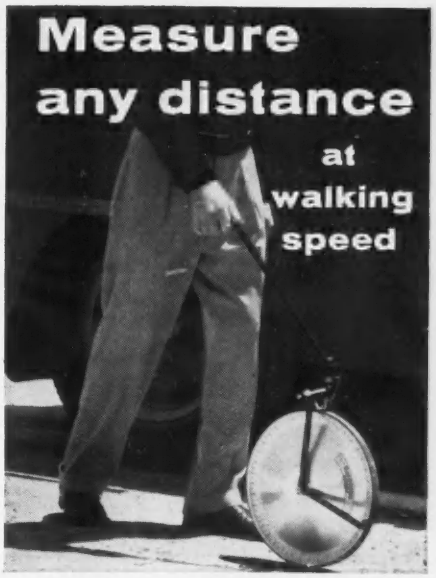
Tests in England are being conducted by Standard Telecommunication Laboratories, Ltd., a British affiliate of ITT. In making report of tests, ITT pointed out that until now long distance transmission by waveguide has had two major limitations: (1) great loss of signal strength, and (2) difficulty in making signals follow curvature of earth. To solve these problems, a "pipe" was designed consisting of specially treated aluminum wire formed like tightly coiled spring.

With this "pipe," signals are now being sent 3600 feet with expectation that much greater distances will be possible by use of repeater units to boost signal strength during its journey. 3600-foot experimental link is a hairpin-shaped path, with each leg 1800 feet in length. At present system is being operated above ground. In commercial use it would be buried.

* * *

Bell Labs Will "Plant" a "Crop"

BELL TELEPHONE LABORATORIES has acquired 15 acres of New Mexico farmland near Roswell, & will "Plant" "Crop" consisting of 12,000 items of telephone equipment as part of long-range testing program. In 1958, 11,000 items were buried on similar Laboratories-owned "farm" near Bainbridge, Ga. Present plans call for digging up samples at intervals ranging from one to



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automatically!

It's So Easy to measure with a Rolatape ...and you save time on every estimating job...no tapes to wind, no helper is required. You get precision-accurate measurements every time.

Records Feet automatically and the accumulated total is always in full view.

Shows Inches, and Fractions of an inch. Wheel is calibrated in inches and fractions for quick easy reading.

Shows Tenths of a foot. Wheel is calibrated in tenths on reverse side for engineers.

There is a variety of Rolatape Models to suit your needs. See them at your local dealers.

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Measuring Wheels

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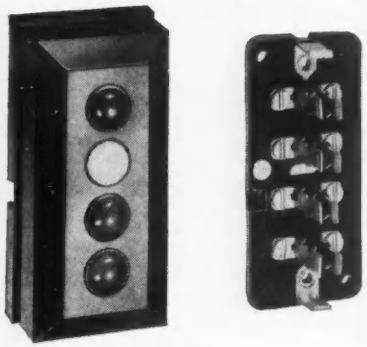
SUTTLE

Two New All-Purpose

INDICATOR LIGHTS

Now Available!



SE-20B3

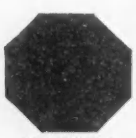
New 4-Lens Indicator Light!

Your telephone subscribers' needs for this new W. E. equivalent 4-light unit are countless! The new **SUTTLE** SE-20B3 Indicator Light consists of two pieces. One is the four lens plastic housing including white, green, red, and amber glass lamp caps. The other is the plastic base with four lamp jacks designed to accept any standard switchboard lamp in 6, 12, 24, or 48 volts. Of lustrous ebony plastic, the SE-20B3 presents a pleasing appearance in offices and serves as an excellent visual signal where four signals in one compact unit are required. Now available from **SUTTLE** or your local distributor. Order today! Price, $3.25 ea.

Indicator Light Houses a Neon Flasher Bulb

which lights in an alternating pattern on incoming ringing voltage—*no relays necessary!*

Also included is the new higher 180° beehive lens with parallel reflective ridges. The SUTTLE SE-21B3 Indicator Light solves the visual signaling problem without the high cost of relays. Order from SUTTLE or your local distributor today! Price, $6.80 ea.



SE-21B3

Serving the Communications Industry since 1910!

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32 years to see how they have stood up. Tests are representative of two general types of soil conditions — alkaline & dry at Roswell, & acid and moist at Bainbridge.

* * *

Yellow Pages Commercial Being Used On MBT Time Service For Trial Period

FOR TRIAL period that started Dec. 1, the Yellow Pages will be mentioned on all Michigan Bell Time Service announcements. During trial period, all Michigan Bell customers who call Time Service will hear announcement "*At the tone, your Yellow Pages time will be* ————." Survey of random selection of customers using service will be made during trial period to determine their reaction to the announcement. Results of that survey will be helpful in determining whether commercials should be continued, or possibly extended to company's Weather Service.

* * *

Industry Highlights

LAST MONTH **Creston, Ia.** became first Iowa city to have Direct Distance Dialing when **Creston Mutual Tel. Co.** placed new system in operation . . . **Carl O. Lindeman** elected pres., Pacific Tel. & Tel. He succeeds **Mark R. Sullivan,** who became board chairman. Lindeman was vice-pres.-operations of New Jersey Bell Tel. Co. Pacific T. & T. also established new div'n. to be known as Pacific Telephone-Northwest with **Walter W. Straley** as pres. New div., comprising Washington, Oregon & northern part of Idaho, will have headquarter offices in Seattle & offices also in Portland.

CANADIAN INDEPENDENT TEL. ASSOC. has announced appointment of **William Pryde** as public relations counsel. He will maintain offices at 2 Bloor St. East, Room 41, Toronto 5, Ontario, Canada.

Transfer of ownership of **Pickford Tel. Co.,** in Michigan's Northern Peninsula, to General Telephone organization has been announced by **P. E. Taylor,** sec.-treas. of the Pickford company. Incorporated on September 11, 1912, Pickford Tel. now serves some 2,000 telephones in the exchanges of Pickford, Cedarville, Detour, Rudyard and Kinross. Completely dial operated, the operating area extends into easternmost point of Northern Michigan area.

F. Harold Taylor, pres. of Pickford Tel., indicated that name Pickford Telephone Company would continue in use for some months, with P. E. Taylor serving as a consultant to new owners until October of 1960. Sale of company was accomplished by exchange of common stock, Taylor stated.

Lynn C. Holmes, formerly director of research for **Stromberg-Carlson Division** of **General Dynamics Corp.,** has been named director of engineering operations. Holmes joined company as senior engineer in charge of sound recording research. In 1950 he became associate director of research & later that same year, director of research. **Dr. Nisson A. Finkelstein** has been appointed assistant vice pres. & director of research of **Stromberg-Carlson Division** of **General Dynamics Corp.** He succeeds **Holmes.** Prior to joining Stromberg-Carlson, Dr. Finkelstein was assistant director of Scientific Bureau of **Bausch & Lomb Optical Co.,** position he had held for past three years. . . . **Kenneth H. Robinson, Jr.** recently joined **Andrew Corp.'s** sales engineering staff & will headquarter in Andrew's eastern regional offices at Ridgewood, N. J. Robinson was formerly affiliated with **Ford Motor Co.** & **Airtron Inc.** Robinson will serve Andrew customers in Connecticut, Rhode Island & upper New York state. . . . **International Tel. & Tel. Corp.** announced election of **James F. Lillis** as vice pres. & comptroller. His predecessor, **John G. Copelin,** will concentrate on banking relations abroad. Lillis was vice pres. & comptroller of Burroughs Corp., Detroit.

Only Exide gives you so broad a "choice"

Orange County Telephone Co., of Middletown, N.Y. chose Exide-Manchex Batteries, unmatched for long life, for its Bloomingburg exchange. Unique positive plate lead buttons fit tightly into heavy Silvium alloy grid. Silvium is Exide's patented grid alloy, proved up to 100% more corrosion resistant. Available only in Exide batteries. Each positive plate button contains a reserve supply of lead that turns gradually to active material as needed.

. . . in stationary batteries. What's your objective: long battery life, low initial cost, high current discharge, quick recharge? With Exide, you're free to choose. If you want a particular type of battery—plante, flat plate, calcium grid—Exide can supply it in a wide range of capacity ratings for any application. Because you have so broad a choice, you can select the one battery that best meets your own requirements. Yet in every case you know you are getting the extra dependability and value only Exide offers. So no matter what type of stationary battery you want, buy with confidence. Buy Exide. Full line of rectifier and motor-generator chargers available to cover any application requirements.

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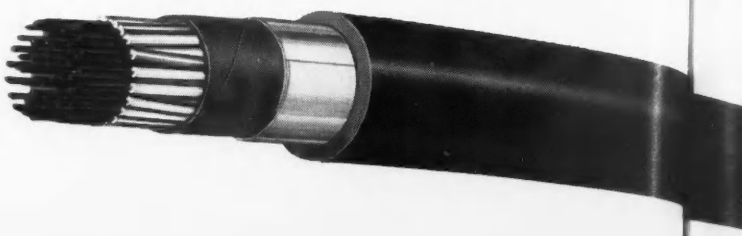
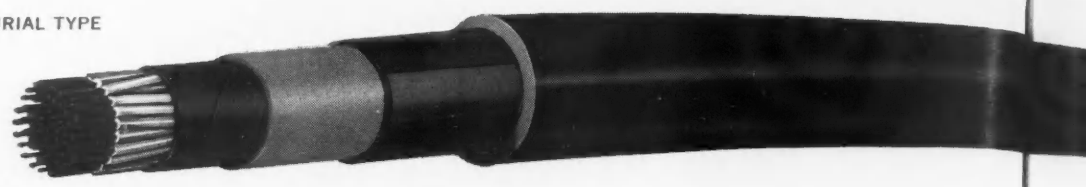
Exide®

AERIAL AND DUCT TYPE



DIRECT BURIAL TYPE



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- Interior Telephone Cable
- Rubber-Insulated Lead-Sheathed Telephone Cable
- Paper-Insulated Lead-Sheathed Telephone Cable
- PD-Tel Wire

EAND CABLE

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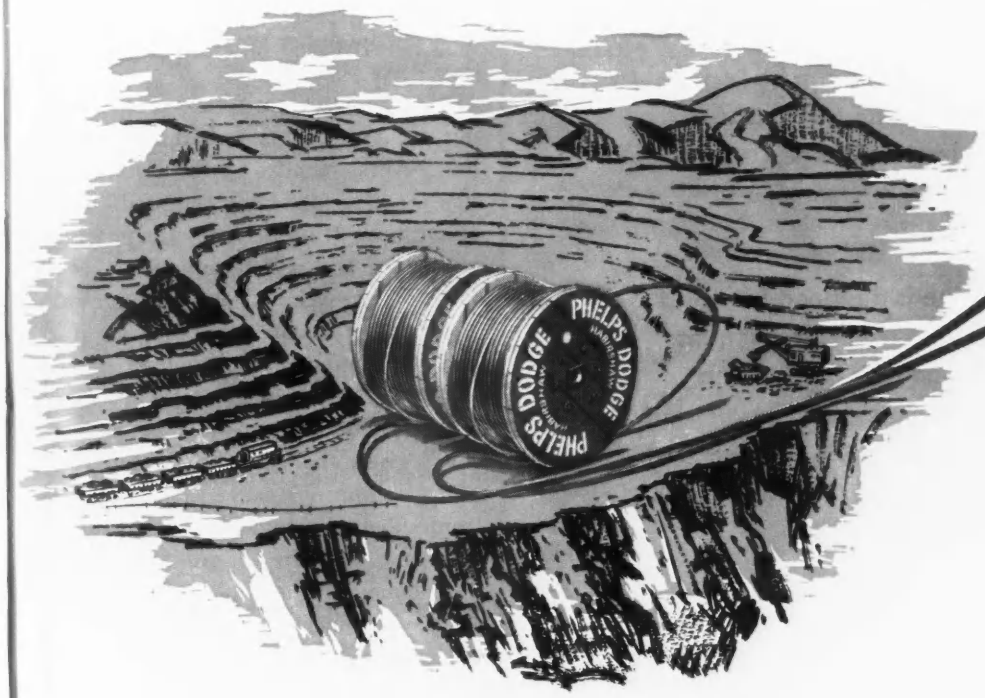

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Now, color conscious subscribers can be kept happy when you use WB Plastic Jacketed Beige Station Wire. A clear soft beige, harmonious in any surroundings, satisfies the most particular housewife.

WB Jacketed Station Wire is designed for fast, economical installation with stapling guns. Available in two, three and four parallel soft copper conductors. Conductors are insulated and color coded with free-stripping polyethylene and jacketed with PLASTITE in beige, brown or ivory.

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WASHINGTO

Post Office Announces Plans For Tests Of Facsimile Mail

CONVINCED of the "practicality" of such a program, the Post Office Department is entering "the second phase of its investigation of the potential use of facsimile transmission for letter mail," Postmaster General Arthur H. Summerfield announced Jan. 26.

International Telephone & Telegraph Corp., which has been studying the feasibility of "fax mail" under a contract awarded by the Post Office Department last Oct. 16, has now been awarded a $3,056,163 research and development contract covering the engineering and procurement of prototype models of high-speed and high-volume facsimile transmitters and receivers and all necessary auxiliary machines and equipment for postal use, according to Summerfield's announcement. It is understood the contract covers a three-year period.

"The contract was awarded following preliminary research during the past several months by the Post Office Department of the compatibility of facsimile transmission with postal operations and a determination that further research of the electronic transport of letter mail was desirable," the announcement added.

Summerfield paid tribute to private industry "for the splendid cooperation" given the department, adding that "leading companies in the electronics and telecommunications fields, including Western Union, American Telephone & Telegraph Co., Radio Corp. of America, Stewart-Warner, A. B. Dick and others, cooperated by providing equipment facilities and technical knowledge."

He said that the contributions of the various companies "would substantially expedite the development of electronic mail processing by making available the know-how gained in years of research and the expenditures of millions of dollars by other

government agencies and private industry."

The Post Office Department first launched its facsimile mail tests quietly early last fall, but shortly after it became known that such research was being carried on, tariff amendments were filed with the FCC by AT&T permitting the company to lease alternate facsimile/video channels to the Post Office Department between Washington and Detroit and Battle Creek, Mich., for tests of facsimile mail by the Post Office.

It is understood that as part of the new phase of its experiment, the Post Office will conduct intercity tests starting in another month or two, and is expected to ask for further common carrier service in this connection.

The new contract to ITT announced by Summerfield calls for: System engineering for high speed transmission and facsimile reproduction of mail at each of two major post offices; engineering for mating of scanning and printing equipment with sanctity equipment to assure the security and privacy of the mails; engineering of sanctity equipment; engineering and production of prototype equipment for electronic switching and coding and related engineering for modification of electronic storage equipment;

Purchase of necessary scanners, printers, openers, paper cutters, inserters, sealers, and tape storage machines for both high speed and medium speed operations; installation and testing of systems and equipment at key post offices, sites to be designated; and furnishing comprehensive reports to the Post Office Department covering reliability and performance of systems and equipment, all economic and operational factors and recommendations for the best possible national speed mail system.

Post Office Department starts second phase of its investigation of potential users of facsimile transmission for letter mail . . . President refuses to alter plan to ask Congress to extend the 10% Excise Tax on local telephone service.

The tests conducted during the past several months, the Post Office said, were designed to ascertain the quality of transmission, speed with which present equipment can process electric mail; and the performance and reliability of present equipment.

Among the transmitter-receiver units tested, it reported, were machines capable of sending and receiving 180 single page letters per minute and others with a capacity of only 20 letters per hour. The former makes use of both coaxial cables and microwave, while the latter can make use of regular telephone wires, it was stated.

In addition to praising private industry for its cooperation in the program, Summerfield also attributed much cost-saving to other government agencies. He pointed out that the Defense Department's needs for high-speed scanning and printing equipment for electronic transmission of urgent messages had produced prototype machines which can be adapted to postal needs.

"The first series of tests, conducted in special laboratories in Washington and other strategically located cities, indicated a high degree of adaptability of equipment already in production to the peculiar needs of the Post Office Department," last months announcement declared. "Facilities already in use for telephone and television transmission are not being used at capacity and preliminary examination indicates mail transmission could to a large extent be handled at times when the cables and relay systems are otherwise idle."

During the recent tests, government agencies provided testing material and thousands of intra-agency messages were sent between Washington, San Francisco, Los Angeles, Detroit, and Battle Creek. Included in the live-testing program were regular letters, official reports, maps, graphs, blueprints, charts, photos, fingerprints, and contracts.

Summerfield said that one of the more important advantages of high speed transmission is the compactness of the equipment and its modest space requirements. Its adaptation to postal operations would affect some reductions in space needs, especially in over-burdened major post offices, would provide relief to congestion in culling, facing, and cancelling operations, and greatly reduce sorting time, it was stated.

"We believe these tests on facsimile mail transmission will convincingly prove that the sanctity of the mail which is of such great interest to everyone can be preserved," Summerfield declared. "We feel, too, that these tests will demonstrate the practicality of what would seem to be a major step in communications which should prove of great value to our national welfare, and, in particular, to our business community."

Eisenhower To Urge Contiuation Of Local Excise Tax

PRESIDENT Eisenhower last month refused to alter the administration's plan to ask Congress to extend the 10% excise tax on local telephone service, but a White House statement indicated that it would "not be inconsistent with the administration's proposal" if a state legislature were to enact legislation imposing the tax on a local basis contingent upon Congress not renewing the levy after the scheduled June 30 expiration date.

The White House views were con-

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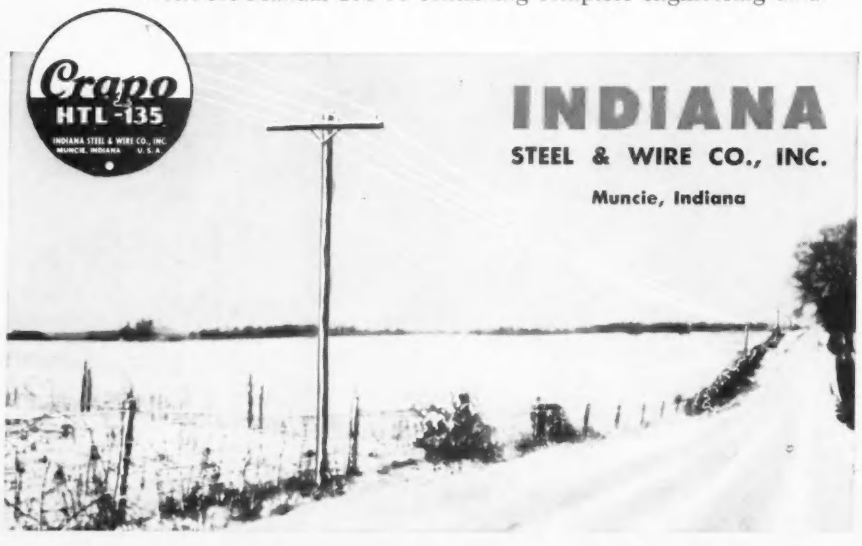
High strength alone is not enough to insure dependable performance in a telephone line wire. The wire also must have high fatigue endurance to provide the margin of safety so necessary in long-span construction. *Crapo* HTL-135 Telephone Line Wire combines high tensile strength and high fatigue endurance with excellent transmission quality to make it the most reliable and economical conductor available for rural subscriber lines. Time and time again, this rugged wire has proved its ability to withstand heavy ice and wind loads, severe temperature changes, vibration and shock damage. The reason is that *Crapo* HTL-135 is tailored to do the job for which it is intended and to do it at the lowest cost commensurate with sound engineering practice.

For dependable long-span, low-cost rural lines, specify *Crapo* HTL-135, the wire with the built-in safety factor. Write for Manual TM-59 containing complete engineering data!



tained in a statement issued following a conference between President Eisenhower and New York Governor Rockefeller, who is seeking to have the right to impose such a tax passed on the the states. He has proposed such a levy for New York state as a means of financing the state's education program. (*See Editorial, page* 27.)

The White House statement, at the conclusion of the conference, said that "After full discussion, the President, noting the urgent need for some payment on the national debt in fiscal 1961, indicated to Governor Rockefeller that the administration would continue to urge the Congress to extend the telephone tax beyond the present expiration date of June 30, 1960. However, he expressed full sympathy with the principle advocated by Governor Rockefeller, namely, wherever possible taxes should be imposed at the level of government providing the services.

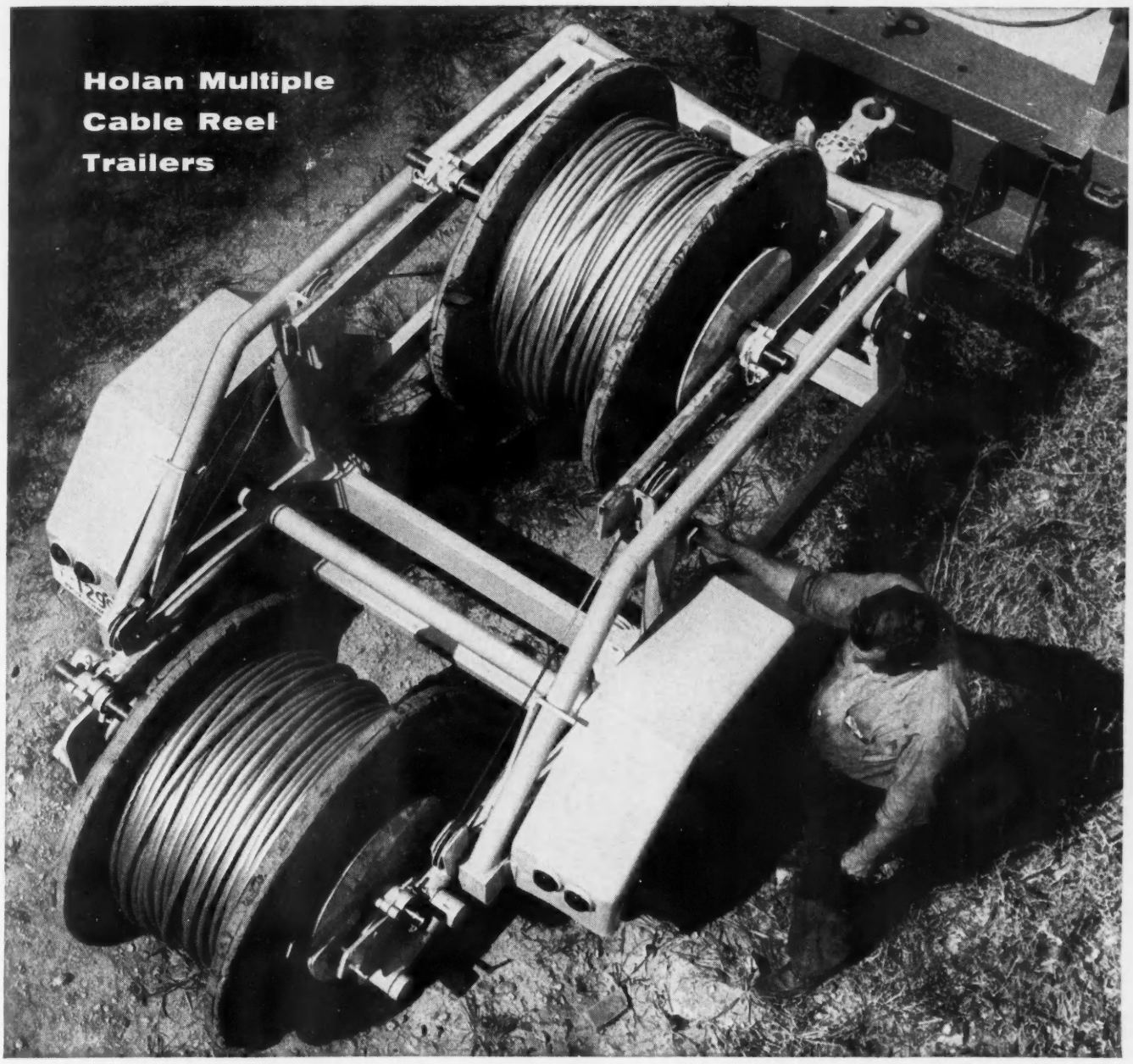
"Governor Rockefeller expressed his own understanding of the problems facing the federal government, and indicated his intention of pressing for a state law which would authorize the imposition of the local telephone tax in New York if the federal government should not extend the tax," the statement continued.

"The President commented that such an action on a contingent basis would not be inconsistent with the administration's proposal."

Some Washington observers felt that the last paragraph of the White House statement, viewing the "contingent basis" state law as not "inconsistent" with the administration's position, added a new twist to speculation as to the final outcome of the issue.

In the fiscal year ended last June 30, the federal government's local telephone excise collections were just under $100,000,000, and some legislators feel this total will have little bearing on Mr. Eisenhower's argument in his budget message urging continuation of various taxes to bring about a $1.2 billion surplus this year.

— *Roland Davies & Fred Henck.*



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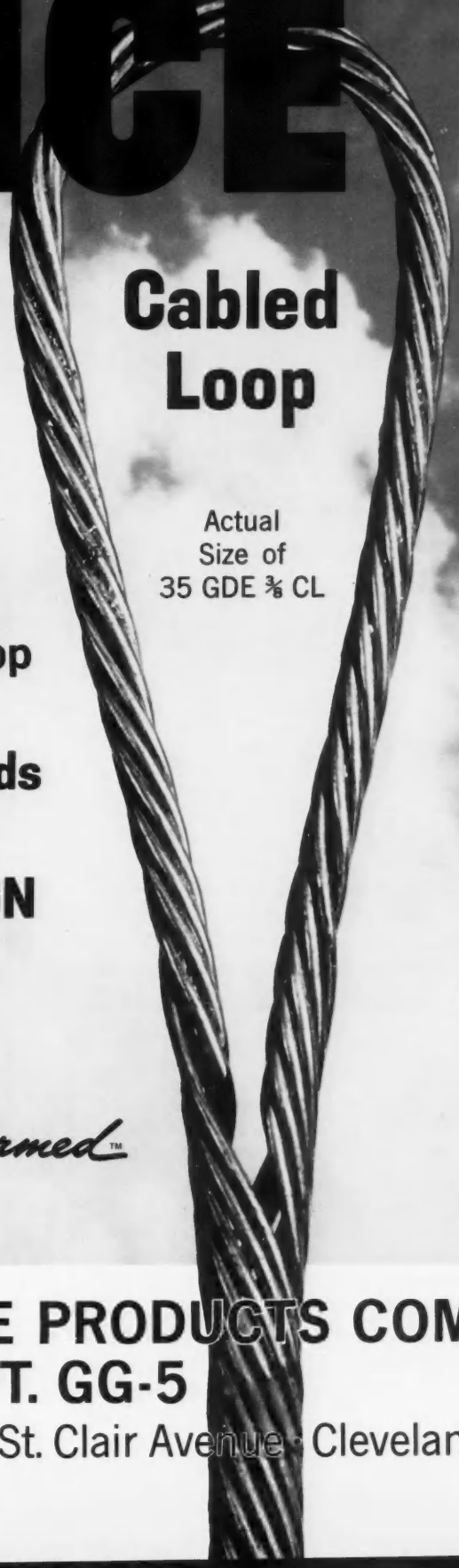

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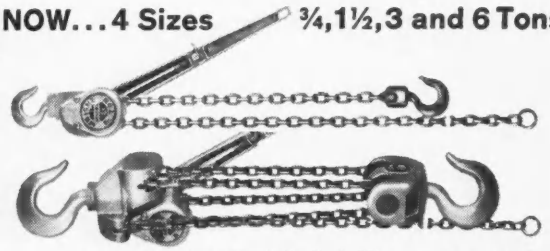
New ¾-ton Type "C" Pull-A-Way

NOW... 4 Sizes ¾,1½,3 and 6 Tons



WRIGHT Type "C" Pull-A-Ways make easy work of hundreds of quick hook-up jobs. Now available in four sizes—¾, 1½, 3 and 6 ton—Type "C" Pull-A-Ways are portable, safe and rugged. Corrosion-resistant modern aluminum alloy castings are used for gear case, handle and covers of all models. Hooks, load chain and chain sheave are made of alloy steel. Positive, dependable load brake securely holds load at any point. Lubricated for life. Weights: ¾-ton, 14 lbs; 1½-ton, 23½ lbs; 3-ton, 36½ lbs; 6-ton, 63 lbs.

Write to our York, Pa., office for Bulletin DH-56A

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York, Pa., Atlanta, Chicago, Denver, Detroit, Houston, Los Angeles, New York, Philadelphia, Pittsburgh, San Francisco, Bridgeport, Conn.

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Only one of the many types of branch-out covers is shown here. Branch-outs are available with two or more legs in a full range of sizes and, if sufficient quantities are ordered, in any color desired. Zippertubing will match the color of the cable jacket exactly, if you wish.

Conventional "T," "Y" and fork designs are available for distribution cable branch-outs. By stocking a variety of shapes and sizes, you'll find you can meet all day-to-day requirements efficiently, economically and better than any way you may now be using.

Confidential Design Service

Skilled Zippertubing engineers are at your service in the designing of intricate configurations that will offer you the best, most economical method of obtaining the protection you require. All information is, of course, confidential. When you need cable covers of any type, you need go no further than Zippertubing . . . and what you tell Zippertubing, goes no further!

At your request, our representative will call for a consultation or you can mail your design concept to us for evaluation and quotation.

Zippertubing Cable Jackets and Protectors just naturally go together!

Send for free catalog on the complete line of Zippertubing. Zippertubing cable covers are available to meet extremes of temperatures and chemical conditions. You can shield and jacket cables in minutes . . . make emergency repair or design changes easily and quickly with these zip-on covers. They are in use today in every major aircraft, missile and electronics plant.

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New 1960
CUSHMAN
780 TRUCKSTER
with built-in economy

Cushman 780 Trucksters carry the biggest set of rugged muscles ever built into a light hauling vehicle. They offer the greatest economy . . . small initial investment, minimum maintenance expense, operating cost of less than a penny per mile, and savings on taxes and insurance.

Capable of carrying an 800 pound payload, the 780 Truckster is a versatile workhorse. It goes everywhere, parks anywhere, maneuvers easily in crowded quarters.

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Ask your dealer for a demonstration of how the Truckster can cut costs—or write for information

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NAME _____

(ATTACH TO YOUR LETTERHEAD)

INDUST

Deus Ex Machina

THAT a machine can be devised to out-think its master is not a new idea. Fiction writers, from Edgar Allan Poe to Arthur C. Clarke, have revelled in it. But it is a shock to learn that the I.B.M. wizards have actually made machines that can beat them at a game of checkers.

Dr. Norbert Wiener, the mathematical genius of the Massachusettes Institute of Technology, states unequivocally that "machines can and do transcend some of the limitations of their designers," and that within a generation they will be beating their erstwhile masters at playing chess.

From that, it is obvious, machines that can design a telephone plant, run for Congress, make love to an heiress, set up a rate schedule, or even out-argue a regulatory commission lawyer, merely call for a few more years of applied cybernetics.

* * *

Munich, 1960 Version

THE STEEL strike settlement was hailed as a victory by union leaders. For the country as a whole, it is as much of a victory as Neville Chamberlain's agreement with Hitler in 1938. Then the freedom-loving Czechs were the victims. This time, we the people of America are sold down the river, even though we may not be loaded on to the scows for a few months. The 1960 steel compromise is the Munich of the War against Inflation.

Here is an indication, from U.S. Department of Labor figures, of what happened to us in the decade 1948-1958 and is still happening: By 1953, the total output per man-hour had risen 20 per cent above the 1948 figure; but a steel worker's wages had risen 38 per cent in the same period. Five years later, in 1958, the total output per man-hour had risen 33 per cent above the 1948 figure, while the wage of a steel worker had

STRY OBSERVATIONS By L. A. GRITTEN

climbed 85 per cent higher. They are followed by construction workers, up 70 per cent; manufacturing and automobile workers, up 60 per cent; and electrical goods workers, up 59 per cent. With steel workers leading the way, the yardstick of inflation, the gap between wages and production, widens and widens.

As always, the "White Collar" fixed-income people are hit first and worst, but they will not be lonely. As the "annual pay hike regardless of production" philosophy does its nasty work, as we price ourselves further out of foreign markets and price our foreign competitors further into our own markets, we shall all be in the same boat.

Nikita Khrushchev told us he would bury us. We are handing him the shovel.

* * *

Special Invitation

THERE is many a slip 'twixt the cup of top level A.T.&T.—U.S.I.T.A. toll agreements and the lip of working contracts with operating Bell companies. General Telephone & Electronics of Ohio, unable to achieve a satisfactory arrangement with the Ohio Bell company, has asked the Ohio commission to make mandatory the use of the U.S.I.T.A. separations manual in Ohio Bell-General toll settlement determinations. Ohio Bell denies the validity of the U.S.I.T.A. manual and requests the Ohio P.U.C. to establish a basis of settlement.

The Arabs have an adage to the effect that once a camel gets its nose under the edge of your tent, the rest of the animal will soon be inside with you. State regulatory commissions have usually regarded Bell-Independent toll settlements as something that the companies should settle for themselves, without benefit of state regulation. The Ohio departure from the norm could easily initiate a general change of thought that would affect other commissions and other subjects of controversy. The camel has been invited to poke his nose in.

* * *

Business Opportunity

YOU TOO can make thousands of dollars in a few minutes! Send no money. Merely follow these simple instructions:

1) Drink a lot of beer.

2) Then, for your own pleasure, on your own time, of your own free will, jump off a telephone pole, or into a manhole, and crack a few ribs or hurt your back.

3) Then collect two or three years wages from the telephone company.

Ridiculous? Of course! But — In Seattle, Clarence Lowery, a merchant seaman, brought suit against Weyerhaeuser Steamship Company. He suffered a neck injury when he dived from the flying bridge of the *S. S. F. E. Weyerhaeuser,* while he was a member of a swimming recreation party in the Canal Zone. The sailor's suit was based on the claim that, because he had been drinking beer and was not physically capable of diving safely, the captain should have prevented him from diving. On January 11, 1960 Judge Eugene A. Wright approved an agreed judgment under which Lowery was awarded $12,500.

* * *

Round And Round

HENRY DREYFUSS, industrial designer, has produced a circular telephone booth with a sliding door that disappears into the wall. This is evidence of awareness of the changing shape of Homo Americanus. The packing cases currently in use for the purpose were designed to afford a minimum of space to lean and muscular Americans of an earlier age.

The majority of modern Americans, under the benign influences of 40-hour weeks, labor-saving gadgetry, coffee-and-doughnut breaks, personal motorized transportation at all hours and the irreducible minimum of physical exercise, have acquired an equatorial cross-section like that of an over-stuffed frankfurter. With a little squeezing, they will fit perfectly into the new circular booths. Thus is realized that dream of telephone booth designers, the complete elimination of air-pockets or unfilled space.

The present supply of coffin-type booths should be taken over by the Federal government, for issue gratis to paunchless Pakistanis or other permanent recipients of U.S. bounty.

* * *

"Untie Me, Villain!"

PRESIDENT EISENHOWER and the federal budgeteers want the Congress to retain the ten per cent tax on telephone service. Governor Rockefeller and others want it to be turned over to the States. Either way, it is loathsome to this industry.

It reminds us of an old-style melodrama: The lovely heroine, bound and helpless, watches the two villains fighting for possession of her. In this case, one of the villains has had her for nearly twenty years; and she doesn't think much of the other one. If she cannot escape from both of them, she may be better off with the brand of sin she is used to.

* * *

Thought Control

MORE governmental censorship! The U.S. State Department has ordered the Voice of America and the U.S. Information Agency to stop using the expressions "Free World" and "Free Nations." It is felt that these crude references to the democratic idea of freedom, with their implication that there may be a certain lack of freedom in the countries acquired by the U.S.S.R., might be offensive to Comrade Khrushchev!

Those strange noises you heard could have been Patrick Henry, turning in his grave.

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e businessman's telephone...

Kellogg K-1A1

Here's how you can reap some of the extra monthly revenue to be earned from business subscribers.

Every business or professional office can profit from the added convenience and efficiency of a K-1A1 key telephone system. This means extra revenue for you in higher rentals and increased service.

Kellogg's K-1A1 has all the features businessmen want in a push-button telephone: complete flexibility, including added line capacity, HOLD button, intercom button (press and dial your party) . . . and a choice of smart colors that brighten any office!

Kellogg's K-1A1 has all of the features *you* want – recognized and accepted by your subscribers for its design and performance – optional arrangements to fit each subscriber's needs – lower maintenance costs – the industry's standard in quality and engineering.

Ask your Kellogg representative to give you all the details and help to work out a promotion program to help you sell the business and professional subscribers in your area.

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Save space. Gould's new Stationary Batteries in Plastrite Jars save you 30-40% more floor space; this means you can increase your battery room capacity without increasing the room size. Lightweight Plastrite Jars have great impact resistance, are unharmed by normal handling and shipment.

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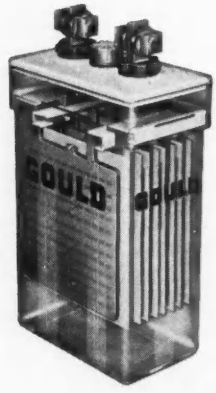
Gould Stationary Batteries in Plastrite Jars are available in Planté, Calcium, or Kathanode. Write for details today, or call your local Gould office listed under "Batteries—Industrial" in the Yellow Pages. Gould-National Batteries, Inc., Trenton 7, N.J. *IN CANADA, WRITE TO GOULD-NATIONAL BATTERIES OF CANADA, LTD., 1819 YONGE STREET, TORONTO, ONTARIO.*



New Stationary Batteries in Plastrite Jars offer the same long life for which Gould has always been famous.

More Power to you from **GOULD**

EDITORIAL

"Look Here, Mr. Governor . . ."

FROM the reports we have been reading, we are reasonably safe in assuming that at least one group in the U.S.A. is *certain* the 10 per cent excise tax on local telephone service will be permitted to expire on June 30 as scheduled.

In fact, it appears the state governors, who are the top members of this group, are as anxious for the tax to expire on its scheduled date as are members of the telephone industry and the nation's telephone users.

But right there the similarity in the goals of the three groups — *the telephone industry*, *the telephone subscribers*, and *the state governors* — ends. It ends because the governors' interest in bringing about the termination of the federal excise tax on telephone service is *not* to free telephone users from an unjust and discriminatory tax, but to *end* the government's take of the telephone tax and *transfer* the collections to the coffers of the individual states.

The seriousness of the governors' plans to bring about this transfer of the telephone excise tax revenue from the nation's capitol to the individual state capitols is clearly indicated by the strong pressures now being exerted on the Eisenhower administration to allow the tax to drop from the federal books so the states can pick it up as a revenue-raising measure.

Last month Governor Nelson A. Rockefeller of New York became the second chief state executive to call for state imposition of the local telephone tax. His look at the revenue possibilities of such a tax had been preceded by Massachusetts Governor Foster Furcolo, who took a close look at the tax and realized diversion of the revenue from Washington to Boston would considerably increase the tax revenues of his state.

By this time it is plainly apparent that other governors have taken close looks at the telephone excise tax and are eager to join in any effort that will enable their states to retain the revenue produced by the tax.

Also, it is evident that Governor Rockefeller, due to his position as a Republican leader, has been selected as the standard bearer for the move to bring about the end of the federal excise tax on telephone service and the imposition of the telephone tax by the individual states.

In New York, Governor Rockefeller has already set a pattern that may be followed by other states. In brief, the Governor's recent proposal to the state legislature assumes the federal tax will terminate, and cities and school districts would be authorized to impose the telephone service levy to meet the state's serious school financing shortage.

In his statements to the press Governor Rockefeller has noted that school financing is a problem all over the nation and use of the telephone levy for meeting the problem is "attractive" and "constructive."

We have no quarrel with Governor Rockefeller on the school financing problem. That problem is indeed serious and we are as anxious as anyone to see it solved.

However, we think it is time for the New York Governor and the other governors to explain *why the telephone user should be singled out to pay the bill.*

Also, we believe the time has come for the nation's telephone users to say "*Look here, Mr. Governor . . .*" and protest the present move of the state governors to force the tax shift.

We say this because we believe that unless such protests are made, many years from now the infant who was born last night will be forced to pay a temporary tax that was enacted to help the nation meet the financial demand of a wartime emergency. And he will be paying that tax because very few people in 1960 let their elected representatives and officials know (1) that they expected the federal excise tax on telephone service to end on June 30, 1960, and (2) that they opposed any move to transfer the tax to the individual states.

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Arthur H. Stoutenberg inspects General Telephone Company of Florida's 45BX Carrier installation on the third floor of the Tampa office building.

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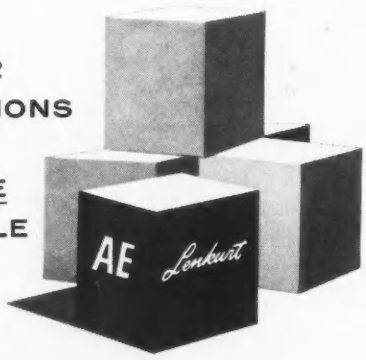


AUTOMATIC ELECTRIC

Subsidiary of
GENERAL TELEPHONE & ELECTRONICS

GENERAL SYSTEM

By JAMES L. MORRISON

General Commercial Superintendent,
West Coast Telephone Co.,
Everett, Wash.

Preparing For The Rate Case

You file a rate increase application because your company's earnings are unsatisfactory. From then on you should work hard to improve your chances for a favorable decision. In fact, if you don't help yourself you have no right to expect others to do your work for you.

SOME FOLKS like to take a vacation by jumping in the car and starting out with no objective in mind, except, perhaps, to use up two weeks. There is nothing wrong with this approach to a vacation but, unfortunately, it is also the way in which some telephone companies go into a rate case.

You file a rate application because you need more money and it only makes good sense to do everything possible to improve your chances for a favorable order. In fact, if you don't help yourself you have no right to expect others to give you sympathetic understanding.

From here on we shall consider a number of things which can help you prepare for your next rate case. Not every company will need to do everything suggested. You must honestly analyze your own situation and, having done that, you can pick and choose the things which will help. Remember, though, that ideas are no more than 10 per cent of what's needed. The solution will require lots of elbow grease and shoe leather.

Your budgets have alerted you to the need for rate relief in, say, nine months. As a small company you can expect faster action on your application than the big companies receive. Their cases get quite complex and take more time. So if you will need relief in nine months, you should file your application within the next six months.

"Rate Case — Things To Do"

NEXT, put this article down, get your hat and go to the drug store to buy a 25-cent bound notebook. When you return to your desk, paste a big sticker on the front of the notebook and mark it "Rate Case — Things To Do." On *Page One* write in the target date on which you will file your rate application. On the following pages make notes of the suggestions you read here which you can use. Don't depend on your memory! The experts say that we lose, within 24 hours, 75 per cent of what we read. If we write it down, however, it sticks with us for awhile.

A few weeks ago after you read the first, 2nd and 3rd installments of this article, you went fishing. You thought about your business and your service and you made some notes. Now you can enter those thoughts in your notebook.

The next step is to obtain a good estimate of the total amount of rate increase you will need. Your budgets will provide this information. Your calculation will be that amount needed to produce a fair return on your investment after expenses. The method of calculation depends upon the practices of your commission. Some states make allowances which others do not follow.

Generally, however, you need to know present net

plant investment plus the additions you expect to make during the next year. You will also need to calculate present and estimated future revenue, without considering an increase, and then do the same for operating expenses. When completed, this information will show a profit or a loss. If it shows a profit you divide that sum by your rate base to determine present rate of return. The difference between what you expect to earn without an increase and the amount you should earn represents approximate rate increase needed.

An attempt to be more precise in this installment would surely conflict with the practices of one or more Commissions. If you need help in figuring it out ask your telephone accountant, state association or neighboring company.

"The Dollar Amount of Increase"

THE DOLLAR amount of increase is important. It will have a bearing on the quantity of opposition you can expect from customers. In some states you can file for a dollar amount while other states require you to spread the increase among the classes of service. In either event you should spread the proposed increase in order to give your customers some idea as to the specific rate they can expect. With this done you have something definite to talk about. You know where you are and you have a pretty fair idea of what you will need in the future. You have eliminated most of the guesswork.

Get out your last rate order and read it carefully. Have you complied with the order? Were you required to do certain things and are they done? Is there anything in the order that might stand in the way of another increase? If the answer is yes, then you still have six months in which to put your house in order. Failure to comply with a provision in the last order is a sure way to get off to a bad start with the Commission.

Do you have any unfinished correspondence with the Commission? Clear this up and from now on answer their inquiries promptly. Give special attention to correspondence about service complaints. It should be your objective to clean up all these matters so that the slate is as clean as possible on the date of filing. If you are required to file monthly or quarterly reports be certain these go in on time. If you are behind, get busy and finish up. Remember, the Commission wants to play ball with you, but you must meet it not less than half way.

Sometime within the next month take a trip to the state capitol. In most, if not all, states both the Commission and your state association have offices there. See your association secretary first. Let him look at your budgets and review your rate base. It is his job to help, and he can double-check your figures. Ask his advice. He maintains frequent contact with the Commission and can tell you things you need to know. What is the "atmosphere" at the Commission? Are there any precedents to consider? How full is the Commission docket? All things considered, what are the strong points in your application? What are the weak points? Is it recommended that you proceed?

Arrange this trip at a time when the association secretary can accompany you to the Commission offices. Ask to see the Commissioners and staff. Unless special circumstances prevail, this would be a good time to state you will probably file an application in a few months. Ask for advice. Find out if there is anything you can do to help the Commission. It has problems just like you and maybe you can be of help. Before you leave find out what the Commission staff wants in the way of rate application exhibits. Pick up application instructions or forms.

When you return home write a letter thanking the Commission for its interest in your company. Most Commission mail is full of complaints of one kind or another, and the commissioners will appreciate someone saying "thank you!" If they asked you to do something, follow up immediately, and thereafter keep in regular touch with them.

Accounting Results

DURING the next three or four months your monthly accounting results will actually determine your need and ability to prove in a rate increase. Up to this point you have been working with estimates. Now, you have results which will confirm or deny the estimates. Various factors, such as an unexpected increase in revenue or a drop in expenses, may show that your rate of return is still satisfactory. This, probably, is good news but don't throw your rate-case notebook in the furnace. Keep figuring ahead because inflation will continue to be with us and sooner or later you will require rate relief.

Let us assume, however, that accounting results have verified the need for more revenue. Take a last minute check to be certain that you know of nothing within the next few months to a year which will reverse the downward trend in profits. If you see nothing, then consider yourself committed to a rate case. Your target date for filing will be 30 to 60 days away.

Other Important Decisions

YOU SHOULD decide exactly what you need in total additional revenue, the proposed increase per station and the proof necessary to establish your needs. You must also make some other important decisions.

Most likely, you will seek a general increase to be spread as equitably as possible. Is there any reason why this should not be done?

Will you be able to prepare all the exhibits and financial data? If not, now is the time to secure some help. Call on your association secretary, or perhaps it would be desirable to employ a telephone accountant.

Will you be able to present your evidence at a hearing without help? Your state may require you to be represented by an attorney. If so, that settles the matter. If, however, you have a choice, then you must make this decision.

An attorney can be very helpful. Suppose that your

increase is denied in whole or in part. Could you manage to get by somehow or would you have to consider an appeal to the courts? If yes, then you should secure an attorney. He knows how to lay the necessary groundwork for an appeal.

Do you expect opposition from customers at the hearing? Will the opposition be unorganized or is it likely that they will be represented by counsel? Your answers will help to determine your need for an attorney.

Is it likely that you will need expert testimony? A cost of money expert? The answer is probably no, but if you do, an attorney would be helpful in asking the expert the right questions. Can you line up some satisfied customers who will testify in favor of your application or your service? If you can, an attorney will help them present their views.

Let's take a moment right here to consider testimony from satisfied customers. You rarely hear such testimony. This does not mean they would not testify but, rather, it stems from the fact that they are seldom asked to appear. If you inquire you will find at least a few who will say a good word for your cause. Line them up, and, if nothing else, have them ready to appear in case they are needed.

If you do employ an attorney, try to get one who is experienced in rate case work. He will know exactly what to do and can offer valuable suggestions based upon his experience. If nothing else, you may be able to justify his fee on the knowledge and assurance that your rate case is in good hands.

If you decide you want an attorney now is the time to see him. In the next month or two he'll have time in which to study your case, and he can make some good suggestions. You will have time in which to put those suggestions to work.

If, however, you can organize your exhibits, speak clearly and forcefully, remain calm under questioning, and know what you are doing, then there is a good chance that you do not need an attorney.

"Your First Audience"

YOU ARE now committed. It is important that you adopt a positive frame of mind. You have two audiences before you and each must be sold upon the merits of your application. For the balance of this installment we shall consider the Commission as your first audience. In the next installment we shall consider your customers.

Have you ever seen a salesman who apologized for his merchandise? Did you ever see him sell anything? Of course not! It is no different with a rate case. *You must sell your cause.*

The Commission is a legally constituted body with quasi-judicial characteristics. It is not the Commission's place to take sides or show favoritism. The Commission has a responsibility to protect the public against unfair or unreasonable treatment and an equal responsibility to protect you and your investment against unfair and unreasonable treatment. As a practical matter, however, some Commissions may operate on the assumption you can take care of yourself while the public has no one to look out for its interest. Such an assumption has produced some bizarre results. In any event, the burden of proof is clearly upon you. There is no burden for anything upon the public.

Probably you have had at least two rate proceedings in the past 15 years. Chances are the proceedings were somewhat distasteful. But you have had a lot of company, for no one likes to go through a rate proceeding. It is not a simple process, but the tips Jim Morrison will give you in each chapter of his new series will prove that proper preparation for a rate case makes rate relief easier to obtain.

We hope each TE&M reader will carefully study each chapter of Mr. Morrison's article. His suggestions will prove that the company seeking a rate increase has an opportunity to do more than win a rate case. With adequate preparation, the company can educate its customers, build good will, and win new friends . . . (And here's a tip — TE&M's Educational Division will prepare a book containing all chapters of Mr. Morrison's article following publication of the complete series. Let us know how many copies you will need. The price will be $1.00 per copy.)

In selling your case to the Commission you will rely heavily upon financial and operating information set forth on pieces of paper called exhibits. The exhibits will be supplemented by correspondence and by testimony at a hearing. The process is not a game in which you hold back "surprises." On the contrary, it is your objective to present a complete story. Omissions or misrepresentations will lead to trouble.

Practices vary among the states. In some, you file an application and wait until the hearing to present evidence. In others, you file exhibits with your application and the hearing is used for clarification. You should do what your Commission wants you to do. Unless the Commission objects, the author believes it is good salesmanship to file at least the prime exhibits with your application. This gives the Commission a chance to look at your case, may help speed up the hearings, and may accelerate the issuance of an order.

The number and type of exhibits will depend upon Commission requirements and the nature and complexity of your case. Here is a list of the most common exhibits:

(1) Service Territory Map: — This is nothing more than an exchange boundary map. Ordinarily you won't file it unless required by the Commission.

Next page, please

RATE CASE PREPARATION

(Continued from page 33)

(2) Articles of Incorporation: — You should have extra copies. In most states they can be obtained from the Secretary of State's office. Some Commissions require the Secretary of State's verification that the articles are up to date.

(3) Balance Sheet: — Draw this from your books. It is suggested that you provide three columns of figures. One column is a balance sheet as of the end of the last month before you file your application. Column two is a balance sheet as of six months ago and column three presents a balance as of twelve months ago.

(4) Income Statement: — This is a record of revenue and expenses. Follow the same procedure as you used in drawing a balance sheet. One column shows revenue for the full month prior to date of application. The second column shows data for the last cumulative six months, and the third column is for the last twelve months.

(5) Pro Forma Balance Sheet: — Use the same account classification as under *Item Three*. In column one set forth a balance sheet as of the end of the month before you file your application. In column two set forth the capital additions you will be making within the next twelve months. In column three set forth removals or salvage expected over the next year. In column four set your anticipated balance sheet after allowing for the additions and deletions.

(6) Pro Forma Income Statement: — Prepare this just as you prepared the pro forma balance sheet. In column two set forth the revenue to be received from the rate increase as well as increases in expenses for the next twelve months. In column three set forth revenue and expense reductions expected during the next year. The last column is your anticipated income statement after allowing for increases and reductions.

(7) Schedule of Proposed Rates by Class of Service: — Set out present classes of service and number of stations in each class. Then, show the present rate and in the next column, the proposed increase per station. In the next column show the new rate and in the last column set forth the total dollar amount of increase for the class of service.

In most states a formal application is required. The document will vary from state to state, but generally it tells who you are, what you do and states that you are in need of rate relief without which you will be greatly damaged. Your attorney can prepare the application or your association will help you.

In some states the Commission has prepared a printed form application and questionnaire for small companies to use. This form may be all you need and, if so, say a word of thanks to the Commission for its interest in helping you.

Each case must be tailor-made. Your attorney, accountant or association secretary will help you determine what you need and how it should be prepared.

Other Important Considerations

AT THIS point we should note a few other considerations. The Commission has a fairly wide latitude when it considers your case. It may agree or disagree with your rate base. If it disagrees, the Commission will arrive at its own rate base. Generally, the commissioners have no authority to substitute their judgement for yours in the matter of what constitutes reasonable operating expenses. They may, however, disallow some expenses. Your request may be based upon a return of eight per cent on the rate base and the Commission may be of the opinion that seven per cent is fair and reasonable. You may distribute the proposed increase a certain way among the various classes of service and the Commission may want to distribute it in some other way. The commissioners will consider these things and set forth findings of fact and their opinion in the order. If you disagree with the result you can appeal to the courts.

All these considerations are controversial matters and it is the author's opinion that the average small telephone company should avoid this kind of controversy. Some may consider this sheer cowardice! As a very practical matter, however, the small company has neither the personnel nor the finances to go to court. If you engage in an appeal there is no assurance you will win. It is suggested that you determine, as closely as possible, current Commission thinking and practice, and then base your rate application accordingly. Let the big companies wage the court battles. They are better prepared.

Well, you have prepared your application and at least a few prime exhibits. You have cleaned up unfinished Commission correspondence and your monthly reports are up to date. You have checked at the last moment to be certain the regulatory, political, legislative, and economic atmosphere is reasonably favorable. You have done everything you can to clear up service problems and your operations are being conducted as efficiently and economically as possible. You know where you stand in the opinion of customers. You are ready to file and the target date is tomorrow.

There are several ways to file your application but the best is to deliver it in person. Don't hesitate to ask your association secretary to go with you to the state house. Go over the application with him and give him a copy. He is in frequent contact with the Commission and if he knows your case he can help both sides.

After you have filed your application take a minute to outline the high spots to the Commission. Remember that it is in no position to give any answers or express an opinion without first studying the matter.

For the time being you have done all you can to sell one audience. In the next installment we shall consider your second audience. — *To be continued.*

COMMERCIAL DEPARTMENT NOTES

by ALLAN R. STACEY

"The Directory Cover Problem"

Industry members claim attachments to a directory are illegal, but in some cases the courts have ruled they are permissible. Perhaps it's time to stop the negative proclamations and take positive action.

OUR company's Commercial Department supervisor walked into my office one morning, plunked something down on my desk and said, "Look what I received in the mail." The article before me was a tan plastic cover for our company's telephone directory. It was about 9½ inches by 11½ inches and contained 12 advertisements on the front side, one along the binding edge and one on the back side. In addition, on the back side was a calendar for four months of 1959, the full year 1960 and the full year 1961.

Inside one of the "sleeves" used for attaching the cover to our telephone directory was a white personal list for names and telephone numbers of friends.

This opaque "foreign" directory cover had been mailed to residences in our community and thus our Commercial Department supervisor had received one at her home.

While I was dictating this material, our Marketing supervisor walked in with another foreign directory cover, dark brown in color. This one has 12 different advertisers, not the same as those on the first plastic cover, and a calendar on the back. In addition, it has white spaces upon which the subscriber may write frequently called numbers on the outside of the cover.

The Author, ALLAN R. STACEY, is vice-president of the Sunland-Tujunga Tel. Co., Sunland, Calif.

First Mass Mailings

TO OUR knowledge this was the first time that there had been a true mass mailing of plastic directory covers in our exchange. In prior years there had been an occasional advertising specialist who had come through our community and briefly sold advertising and then mailed out a few covers without really large distribution.

Apparently the foreign cover salesman sells either one local merchant the entire space on back and front of the cover or sells between twelve and twenty ads to that many advertisers. By checking with business friends, I learned that some of them were paying as high as $20 per month or $240 per year for a space one inch by eight inches on the foreign directory cover.

Is It Legal?

FOR years we have been proclaiming that attachments to the directory are illegal but upon being challenged we have not always been able to substantiate the claim. Some courts have ruled that such attachments are illegal and other courts have ruled that they are permissible. Apparently the Commissions have taken a neutral ground in most cases. Perhaps it's time we stopped this negative proclamation and embarked upon positive action.

What Happens To Our Yellow Page Advertisers?

NATURALLY, a dozen or more advertisers spending $250.00 a year to be placed upon a foreign directory cover means so much less revenue for our own telephone company yellow pages. However, in my opinion, this is not the real problem.

My first responsibility is to the advertisers in my yellow pages. It concerns me that a Johnny-Come-Lately can obtain a preferred position on the outside of the cover where many subscribers will see him at the expense of people who have advertised with me for years in a proper position in the yellow pages.

Well, what can we do about it? There are several ways to combat foreign directories. Let's check.

Change Your Own Directory

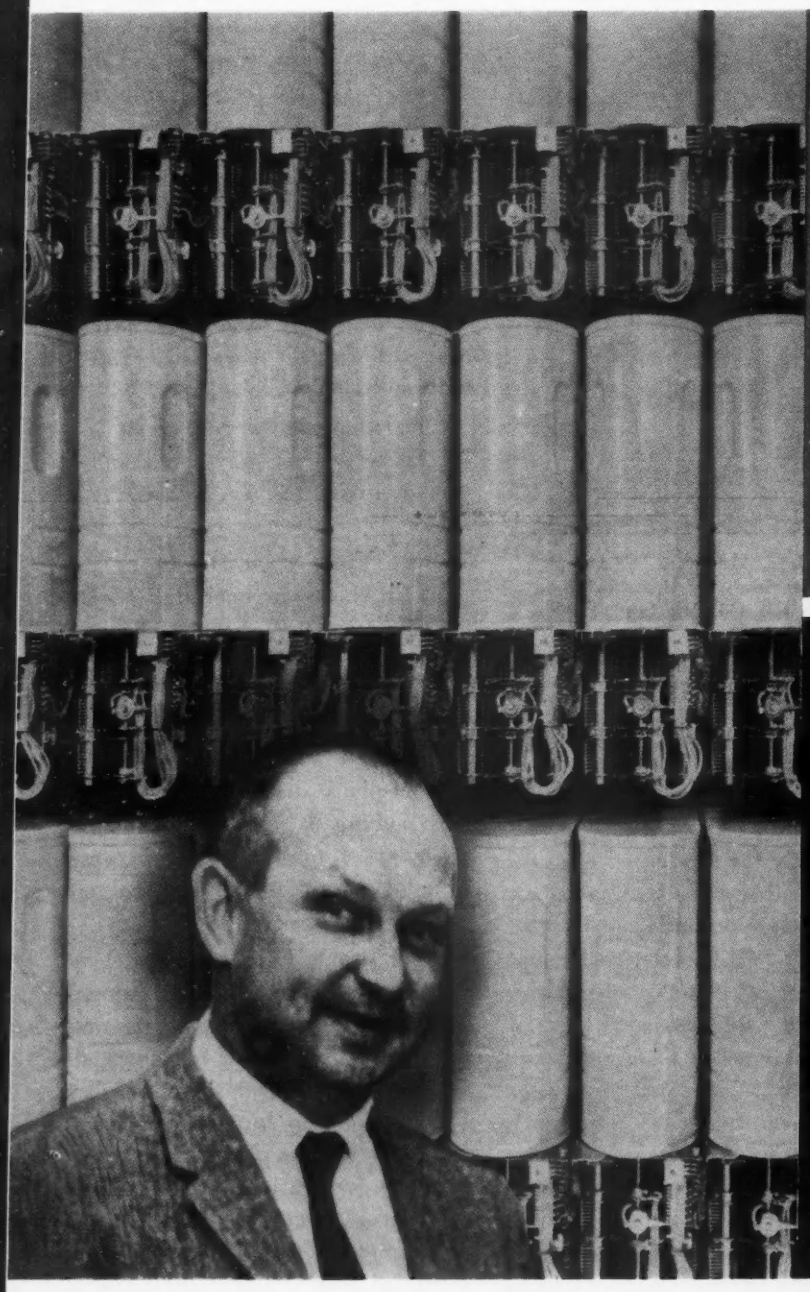
SEVERAL of our operating people have abruptly changed the size of their telephone directory. This has the advantage of making existing foreign directory covers obsolete because they will not fit the newly issued telephone directory. However, it does nothing to discourage the new promoter of foreign covers because he tailors his plastic cover to the new size of the telephone directory.

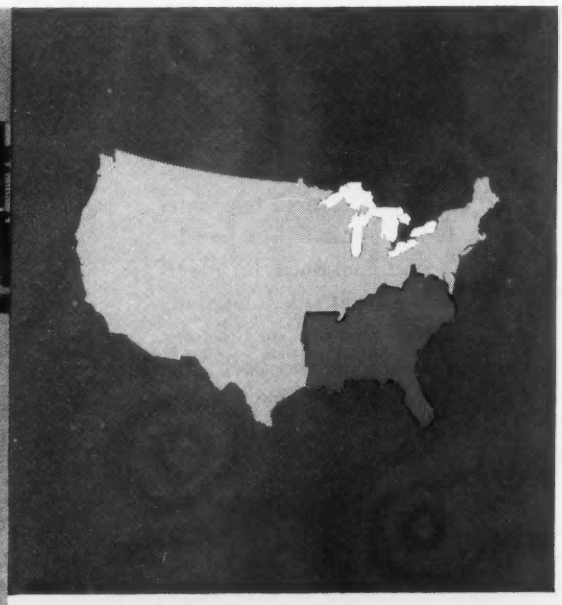
Other people have moved important information such as police numbers and fire numbers onto the outside front cover of the telephone directory in order that the subscriber will not want to hide this information by an opaque plastic cover. However, the foreign cover salesman has very adroitly put police and fire and doctor and other numbers on his own plastic directory cover.

Still a third idea in changing the

in the south

TELEPHONE MEN CHOOSE STROWGER!





RAY WEBB
(group manager,
Central Telephone Company)
is pleased with the operation
of Strowger equipment at the
Mocksville, North Carolina, exchange.
This is just one of the many
dial exchanges in the South
served by Strowger.
See full list at right.

SOUTHERN DIAL EXCHANGES SERVED BY STROWGER:

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ARKANSAS
Augusta
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Black Oak
Booneville
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Carlisle
De Witt
England
Holly Grove
Imboden
Jacksonville
Kensett
Marmaduke
Prescott
Stuttgart

FLORIDA
Arcadia
Auburndale
Bonita Springs
Bowling Green
Bradenton
Clearwater
Crawfordville
Crestview
De Funiak Springs
Destin
Fort Meyers
Fort Walton
Freeport
Indiantown
Lakeland
Lake Wales
Monticello
Naples
Ocala
Panacea
Ponce De Leon
Saint Marks
Shalimar
Sopchoppy
Tallahassee
Tampa
Valparaiso
Winter Haven

GEORGIA
Abbeville
Bluffton
Buena Vista
Carnesville
Chickamauga
Clayton
Coleman
Dawson
Ellaville
Folkston
Fort Gaines
Iron City
Lavonia
Lexington
Lincolnton
Ludowici
Milledgeville
Monroe
Morgan
Nashville
Ocilla
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Plains
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Rincon
Sasser
Shellman
Sylvania
Toccoa
Vienna
Weston
Winterville

KENTUCKY
Ashland
Caneyville
Cecelia
Columbia
Elizabethtown
Flemingsburg
Glasgow
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Greenup
Hodgenville
Lexington
Nicholasville
Oakland
Tompkinsville
Versailles

LOUISIANA
Breaux Bridge
Cankton
Chataignier
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Grand Isle
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Clayton
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Danbury
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Draper
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Durham
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Elm City
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Fountain
Four Oaks
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Grifton
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Harrisburg
Havelock
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Kill Devil Hills
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La Grange
Lake Waccamaw
Leaksville
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Marion
Marshall
Marshallburg
Mars Hill
Maysville
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Moss Hill
Mount Airy
Moyock
Mt. Gilead
Mt. Pleasant
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Nashville
New Bern
New London
Newport
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Oakboro
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Oxford
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Pinetops
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Pittsboro
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Rocky Mount
Roseboro
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Smithfield
South Boston
South Hill
Standardsville
Stone Creek
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SOUTHERN TELEPHONE MEN are pretty much like telephone men across the nation—they insist on the best in dial switching equipment. That's why so many Independent telephone men choose Strowger! The number of Independent stations served by Strowger far exceeds those served by all other makes of dial switching equipment *combined!*

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directory is one which I have yet to see tried. This method is to make the outside binder cover of our telephone company book so limber, pliable and thin that it will not, by itself, physically support a plastic cover when placed upon it. I am going to try this in my own company and will be interested to see the results.

These approaches have only a nuisance value and I think we must go further to be effective.

Sell Your Own Plastic Covers

SEVERAL telephone companies have tried selling plastic covers that are clear and can be seen through so that they do not hide the directory. In some cases these are given outright to the business accounts and sold at enough to cover the cost, approximately 25 cents, to residential subscribers.

The clear plastic covers really don't obstruct the view of the telephone company directory cover underneath. The clear cover protects the book and keeps the corners from becoming worn and will wipe clean very readily. If your telephone directory cover is like mine at home, it is full of doodling marks from telephone conversations. A clear plastic cover will make the book look like new all the time.

During the Commercial Conference of the USITA Convention at Chicago last year, *LaMar Stoops* commented that his company was giving its own clear plastic covers to the business accounts and charging the residence accounts in order to control problems that usually relate to a "give away" situation. He also mentioned that his company was putting a coupon in the directory so that a subscriber could easily order a clear plastic cover. Both of these seem to me to be good ideas.

Use The Boy Scouts

ANOTHER method of selling them is to combine with a worthy local organization, such as the Boy Scouts, and arrange for them to sell covers for 50 cents with the telephone company imprint and possibly even the words, "authorized by your telephone company for use on your directory." The selling organization retains the difference between the 50 cents and the telephone company cost. In this way the Boy Scouts might make about 25 cents per cover sold and there would be more sales made than if the initiative were left to the subscriber to come into the telephone business office.

In Oregon

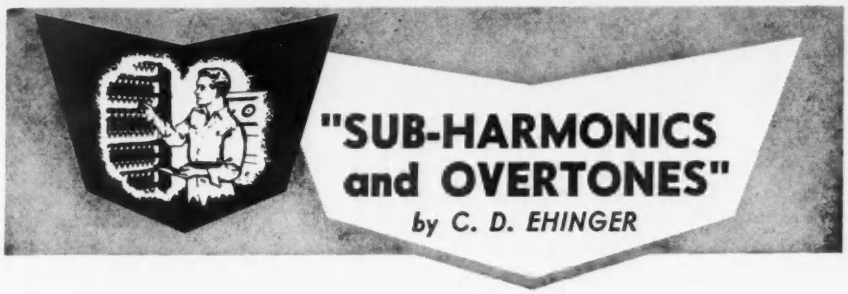
LESTER SCOTT of Oregon dropped me a line about this practice a while ago and said as follows: "*We have ordered* 5,000 *clear plastic directory covers—embossed, 'this cover furnished through the cooperation of the Boy Scouts and Linn County Telephone Company.' The cost is* 27 *cents each and they sell for* 50 *cents. Boy Scouts will receive (local troops)* 23 *cents each cover. One directory cover advertising outfit has already left town. I believe this is the answer to the perennial 'directory cover advertising problem.' And, it creates a lot of good will for the company.*"

Apparently, Lester's point is that if telephone companies furnish these directories, either by selling at cost or selling at a premium under a "tie-in" method, there would be little point for local business men to buy space on another plastic cover. Subscribers are not going to remove an attractive clear plastic cover from their directories and substitute another cover liberally sprinkled with ads.

You know it may just be true that the public really wants a directory cover in plastic or some other form. You will remember that stationery stores, for years, have offered directory binders at a price and they would not offer these if there wasn't a market for selling them.

Accordingly, it seems to me that here is another instance where there is a demand for service. How are we going to fill it? Please send me your ideas regarding foreign directory covers so that we can share them with other people in the industry.

Next issue we'll be talking about sales training for installers — see you then. — *Allan R. Stacey.*



The "Kid" Learns More About Filters

Chuck continues his "lecture" to the Kid on the subject of filters. The Kid designs, builds, and tests a simple low-pass and high-pass filter. (Continued from February 1st issue of TE&M.)

CHUCK LOOKED at the Kid rather quizzically. The youngster had a habit of occasionally surprising him. Chuck didn't wish to push faster than the Kid could absorb information; yet, he felt it would be a shame to pass up the opportunity to make the Kid do a small amount of thinking.

He spoke out loud: "I promised you, Kid, that I would show you a bit of the theory of some simple filters. I don't know whether this will apply to you, but I have always found I can understand something better if I work out the theory and then immediately apply it in practice to see how it works. I guess half of my brains are in my hands, or something, but at least that is the way it works for me."

"Same way with me, Chuck. What little theory I've gone into hasn't really stuck with me unless I've been actually able to see it or do it."

"OK, Kid, let's go into this filter business. Remember. I had drawn for you the diagram of a simple T section, low-pass filter. I'm going to draw a different block diagram of this same T section filter." (*See Figure One.*)

"You will notice, Kid, this is basically the same T section I drew for you last time but I've just used block diagrams to indicate the impedances. In a filter such as this, when the ratio of Z_1 to Z_2 is a real constant for all frequencies, we call the filter a constant-K filter. The things can also be made up into what is called a Pi section and they look like this." (*See Figure Two.*)

"But, let's get down to business and actually make up a filter out of some of the components we have around the office."

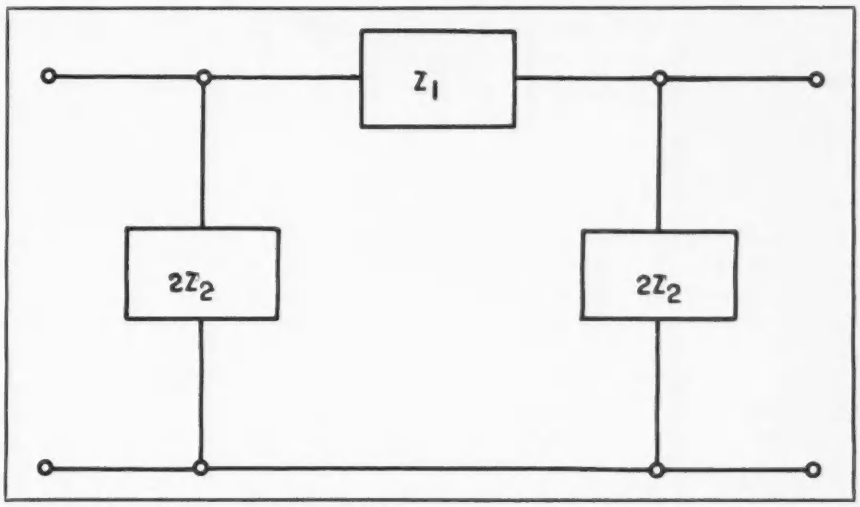


FIGURE TWO: — "PI" Section.

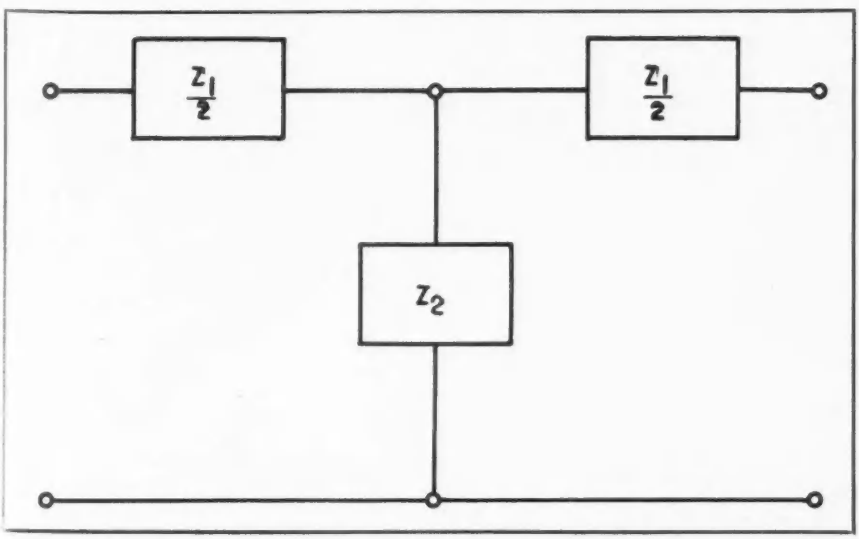


FIGURE ONE: — "T" Section.

As Chuck talked, he again sketched the diagram of a T section constant-K filter. (*See Figure Three.*)

"Now, Kid, remember again that this is a low-pass, constant-K, T section filter. The formulas for figuring out the values we need to put in are quite simple:

$$L_k = \frac{R}{\pi f_c} \qquad C_k = \frac{1}{\pi f_c R}$$

"Kid, look at these simple little formulas. We have four unknowns — the value of the inductance, the capacitance, the terminating resistance, and the cut-off frequency. When you sit down to design a filter you usually know the impedance you have to work into and, of course, you have decided the frequency you wish the filter to cut off. Incidentally, the cut-off frequency is usually that point at

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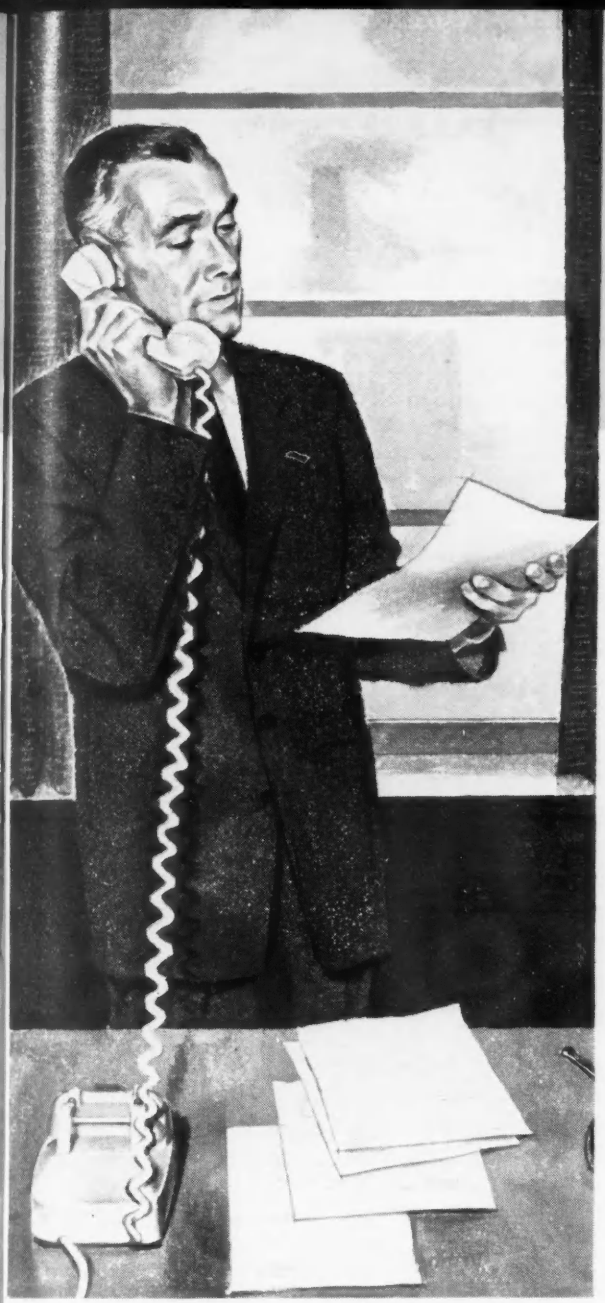

Businessmen in your area need these *special service* phones. And, the extra services you provide mean added revenue for you. Check the businesses in your area for sources of untapped revenue. Insurance agents, automobile dealers, and purchasing agents are just a few of the businessmen who make a lot of calls—businessmen who will appreciate AE *special-service* phones.

SALES AID HELPS SELL PHONES—To help you sell these phones we have a sales aid for you. These special-service phones are featured in a four-page circular that's designed to help you sell the business subscribers in your area. Request Circular 1929-A. Write Automatic Electric Sales Corporation, Northlake, Illinois. Or, call Fillmore 5-7111.

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Operates with indoor dependability. A *must* for cab stands, lumber yards, loading docks and other exposed locations. Locking door limits use—prevents abuse. This phone can be equipped with anti-noise handsets and loud-ringing bells for noisy locations.

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which you are only getting half-power out of the filter."

Chuck continued: — "Sometimes you have to work the thing the other way around. For instance, you and I are going to design and build a simple low-pass filter but, I'll tell you this much, we are going to use some toroid coils out of that filter that went bad the other day and I threw in the junk box. Go get the filter and rip out the coils and let's measure them and see what their value happens to be."

The Kid quickly brought the faulty filter to the bench, tore it apart, and removed the toroid coils. He took the coils over to the impedance bridge and quickly measured them. (*See April* 1, 1959, *issue of TE&M, page* 31.) As he finished the measurements, the Kid said to Chuck, "Each coil measures 48 millihenries."

"What d'you mean by 'each,' Kid? There're only two of them."

"Well, that's what I meant, Chuck. The two coils each measure 48 mh."

"All right, Kid! Like I told you, we are going to work this thing a little bit backwards because we have two coils to fool around with and whose value cannot be changed too easily. Of course, we could always lower the value of inductance by removing turns from the coils, but, since we're just horsing around we'll use the value of the coils exactly as they are. Now, look at this first formula. We are starting with a fixed value of Lk, we'll use a terminating resistance of 600 ohms and so the only unknown is f_c."

$$L_k = \frac{R}{\pi f_c} \quad \left(\frac{L_k}{2} = .048 \text{ henrys}\right)$$

$$f_c = \frac{R}{L_k \pi} = \frac{600}{2 \times .048 \times \pi}$$

$$f_c = 1985 \text{ cps}$$

Chuck quickly substituted into the formula. "According to these calculations, the cut-off frequency will be 1,985 cycles. Incidentally, Kid, you will notice the value of capacity hasn't actually entered into determining the cut-off frequency of this filter, yet it has to be a definite value because the cut-off frequency and the terminating resistance are functions of the value of capacity we will have to use. Let's substitute into the other formula now."

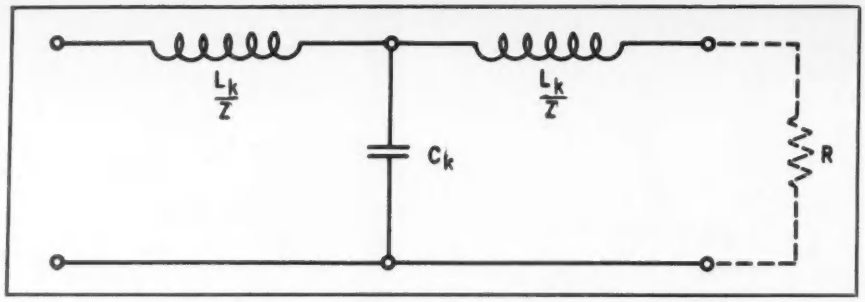

FIGURE THREE: — T Section, Constant K, low pass filter.

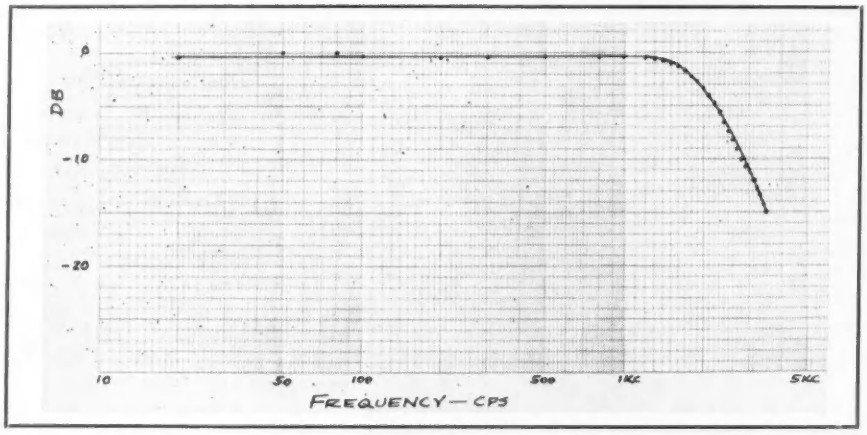

FIGURE FOUR.

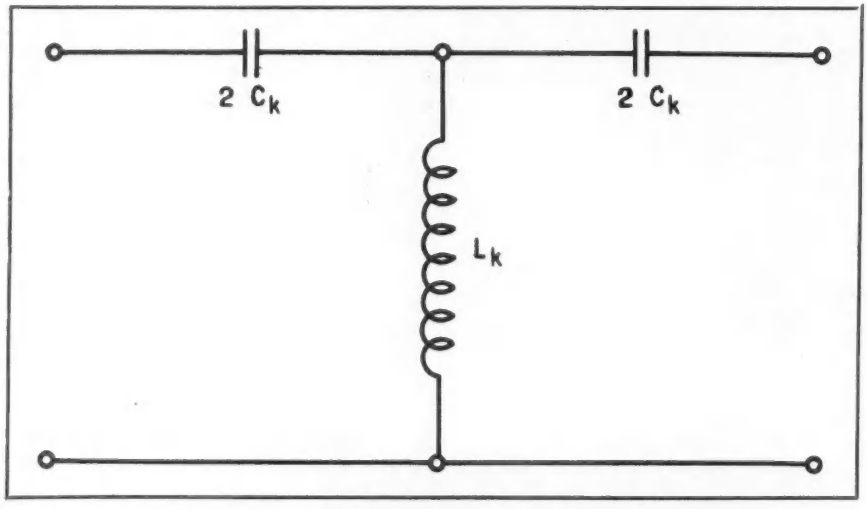

FIGURE FIVE: — T Section, Constant K, High pass filter.

$$C_k = \frac{1}{\pi f_c R}$$

$$C_k = \frac{1}{\pi \times 1985 \times 600}$$

$$C_k = .000000267$$

$$C_k = .267 \text{ mf}$$

Chuck quickly worked out the formula. "Comes out that we will need .267 microfarads of capacity in the vertical section of the filter in order to make the thing work as it's supposed to. Go get a 600 ohm resistor, the audio oscillator, a db meter, and our decade capacitor."

The Kid brought all the items over to the equipment room test bench and the two quickly "haywired" the coils, the condenser, and the resistor in the configuration shown on the diagram.

"OK, Kid," Chuck said, "Run a transmission curve on it now and see

just what happens and whether it works like the theory says."

The Kid set to work with a will and quickly ran the curve. Chuck graphed the results. (*See Figure Four.*)

The Kid's eyes glowed. "By golly, Chuck, look at that! The curve is almost exactly the way you said it would be. This little gadget is passing all frequencies with only a little loss until it gets right up to 1985 cycles. At that point, we have a 3 db loss and then the curve slopes off fairly sharply."

Chuck grinned also, "It always *is* sort of fun when the darned things work out the way theory says they should. Let's quickly go through a simple high-pass filter. The configuration for a T section, constant-K, high-pass filter looks like this. (*See Figure Five.*)

"Notice the difference, Kid, between this filter and the low-pass. In this case, the condensers are in the horizontal or upper arm of the T, and the inductance is in the vertical section of the T — just the opposite of what we had in the low-pass filter. Now, again, we will work somewhat backwards in that we have a fixed value of inductance that we're going to work with. We'll use one of the coils that we used in the other filter, and its value is 48 mh. Again, let's figure what cut-off frequency this will give us for this high-pass filter."

$$L_k = \frac{R}{4\pi f_c}$$

$$f_c = \frac{600}{4 \times \pi \times .048}$$

$$f_c = 992 \text{ cps}$$

Chuck quickly substituted into the equation — "Looks like the cut-off frequency now comes out 992 cycles, or exactly half of what the cut-off frequency was for the low-pass filter. Let's figure what C_k has to be."

Chuck quickly substituted the values into the equation —

$$C_k = \frac{1}{4\pi f_c R}$$

$$C_k = \frac{1}{4\pi \times 992 \times 600}$$

$C_k = .1335$ mf $2C_k = .267$ mf

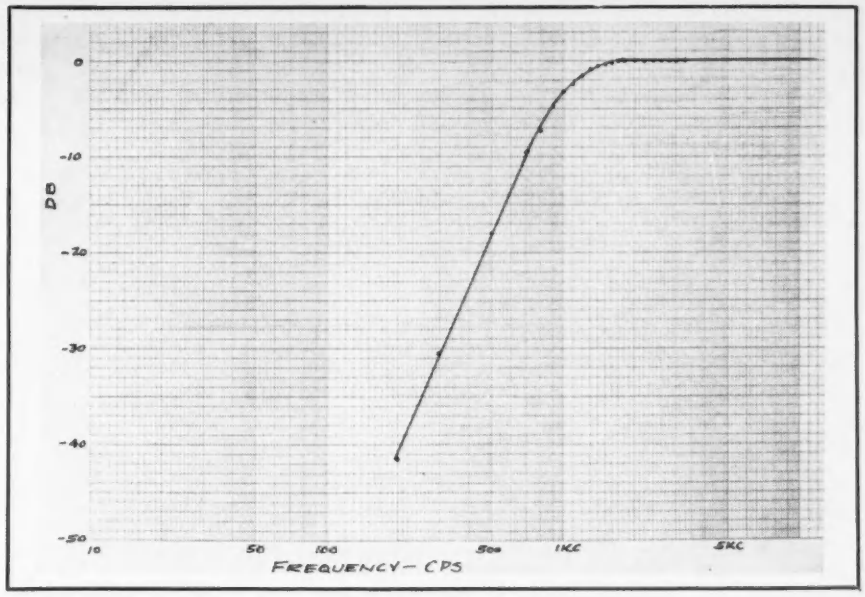

FIGURE SIX.

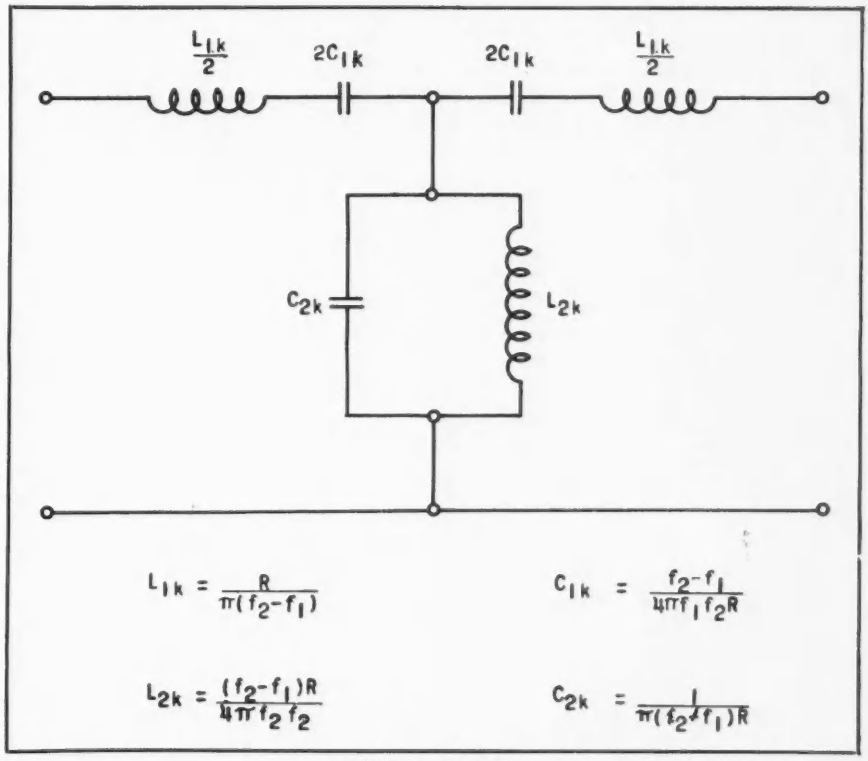

FIGURE SEVEN.

"Looks like C_k has to be .1335 microfarads and, since the upper arms have to be 2 C_k, we will have to use .267 microfarads in the upper arms."

"By golly, Chuck, that's exactly the capacity we used in the vertical section in the low-pass filter."

Chuck spoke in a dry voice, "Amazing, isn't it? Here we are using the identical values of capacity and the identical values of inductance and the same terminating resistance and we have a high-pass filter and the only difference we're going to have is that the cut-off frequency is exactly one-half of the cut-off frequency we had in the other case. Well, anyway, Kid, slap it together and run a transmission curve on it."

The Kid did as Chuck directed. (*See Figure Six*).

"Hey, Chuck, this stuff amazes me — I guess I'm always amazed when you can figure out things and have tests show them to be exactly as the theory says it should be."

"OK, Kid. Now here is a simple

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band-pass, constant-K, T section filter, and the formulas on how to figure the values."

Chuck sketched them for the Kid. (*See Figure Seven.*)

"This little filter takes three inductances and three condensers. Looks like we've run out of inductances, Kid, but it follows exactly the same line of reasoning we used in the others — you just pick out which frequencies you want to be on either side of the pass-band, substitute them into the formula, and come up with your values of inductance and capacitance needed."

Chuck stole a quick glance at the clock. "For gosh sakes, Kid, do you know that you've kept me 45 minutes overtime and I didn't even know it?"

"Gee, no, I didn't know it, Chuck, and I'm sorry!"

Chuck put on a mock show of gruffness. "Well, be sure your time sheet shows that we quit at the regular time. I don't think I would feel right if I billed the company for overtime for something that we were just horsing around at, and where I was trying to beat a little bit of knowledge into that thick thick skull of yours."

The Kid grinned to himself as he stowed away the equipment, and secretly hoped that Chuck would always be willing to take the time to explain things to him. — *C. D. Ehinger.*

References:

Industrial Electronic Handbook, pages 1-277 and 1-278

The Radio Amateur's Handbook. 36th edition, 1959, pages 49, 50, & 51

Any comments, criticisms, or suggested subjects for future topics? Address all correspondence to "Sub-Harmonics and Overtones," Telephone Engineer & Management, 7720 Sheridan Road, Chicago 26, Illinois.

Inter-County T & T Completes 24 Exchange DDD System

INTER-COUNTY Telephone & Telegraph Co., Fort Myers, Fla., is now providing nationwide Direct Distance Dialing for its entire 24-exchange system in south central and southwest Florida.

The company recently completed the final phase of a year-long program with the cutover of DDD equipment at Avon Park, a scenic tourist community located in central Florida.

Although a significant advancement for the Independent telephone industry, the conversion was nothing new for Inter-County patrons — they've had intra-state toll dialing since 1955! The company's local toll network — first Independent facility of its kind in the southeastern U .S. — was followed by a tie-in with nationwide DDD in Dec., 1958. The long haul system was another first for Inter-County when it became the first Independent in Florida to join the national hook-up.

Avon Park's exchange contains a Strowger automatic toll ticketing system, manufactured by Automatic Electric Co., Northlake, Ill. Equipment includes a computer, 30 ticketers, two SATT checking operator positions, three tape perforators and an automatic typewriter for ticketing.

The new equipment, arranged for future addition of detection apparatus, is handling over 50% of the calls for the Avon Park toll center which serves eight other exchanges. Fort Myers provides toll service for the company's remaining 16 exchanges.

Three weeks prior to the SATT cutover, the company placed into service a new 1050-line, 2500 terminal-per-station step-by-step system. Expenditure for the conversions and remodeling of the local exchange-office building was in excess of $500,000.

Inter-County — a company featuring exceptional growth during the past five years — serves a 10,000 sq. mile area in the Sunshine State. One hundred per cent dial operated since 1956, the company has spent over 11 million dollars on an expansion program that has increased its number of telephones from 20,000 in Oct., 1954 to more than 47,000 at present.

Typical of this growth is the Avon Park exchange. The new dial system replaced older dial gear which was outgrown in just five years!

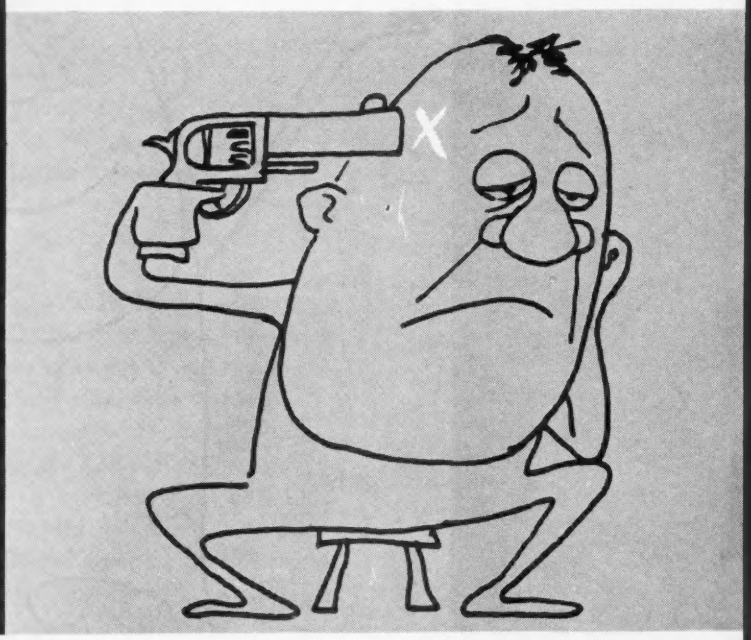
We don't care
if you don't buy
your supplies
from Leich...

FOR MORE DETAILS, SEE THE NEXT PAGE

We just aren't going to do anything drastic if you are getting good service from somebody else and do not choose to do business with Leich.

However, with your kind permission we would like to state again that Leich is at your service with a complete line of high quality, job proven telephone equipment and supplies. We have five, big, fast-service warehouses which carry adequate stocks of most everything you need.

Our people are trained to understand your business and carry on the tradition that Leich has for giving better service than you even expect. On your next supply order – try Leich.



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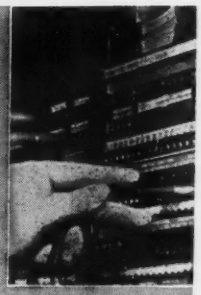
By D. A. PERIGO



All Numeral Numbering vs. Other Plans

Growth, which causes additional central offices, forces the use of additional numbering plan areas or the enlargement of such areas by providing additional central office codes through the use of All Numeral Numbering.

AT THE 1959 USITA Convention Richard A. Mathews presented a paper on "Number Service Aspects in Direct Distance Dialing." (*See page* 54, *of* 10/15/59 *TE&M.*) We believe the entire industry owes a big "Thank you" to Paul Henson and his Engineering Committee for obtaining the services of Dick Mathews for this presentation. An equally big "Thank you" should go to the American Telephone & Telegraph Co. for sharing with us the results of their experiments and the outline of their plans. It is our understanding that the plans outlined by Mr. Mathews at the USITA Convention were presented to the Associated Bell System companies during the same week of October. This, we believe, represents a high level of cooperation between both branches of the industry.

We not only listened to the presentation made by Dick Mathews but have studied and restudied the paper since then. There is much food for thought — but for the moment we'll limit our discussion to only one phase — central office numbering.

Any type of numbering must use seven characters to tie in with DDD as it is now set up. As far as the equipment is concerned, it makes no difference whether the characters are letters or numerals because the equipment reads them all as numerals anyway. It, therefore, seems reasonable from an equipment viewpoint to use All Numeral Numbering.

The Author, D. A. PERIGO, is general traffic superintendent of the West Coast Tel. Co., Everett, Washington.

The 2L5N plan is understood to be one which uses the first two letters of a central office *name*. Actually the two letters could be any two rather than using a name. This would give the same number of *possibilities* as All Numeral Numbering but would undoubtedly lead to misunderstandings when it is necessary to repeat a number. For example, we presently use words to show the proper letter, such as "D as in dog." It would seem a good idea to eliminate this undesirable feature — and ANN does just that.

We use DDD quite a lot. One thing is very noticeable in our own use — we know it takes us longer to dial the only two letters in the central office code than it does to dial any two numerals. (Admission — we wear bifocals; but we've noticed others, who don't, slow up for the letters too.)

All Numeral Dialing

WE CAN think of no arguments which would favor 2L5N over ANN. We believe the arguments are all in favor of ANN — but we also believe we should hold up a warning hand on conversions to ANN. Let's look at a few facts in connection with numbering plans and their effects on some companies.

The primary reason for seven digit numbering is so the equipment will *receive* subscriber dialed calls. *If* an office originates DDD traffic the seven digits would be required for compatability. Now how many offices are there with seven digit numbering which do not, and have no plans to, originate DDD or EAS traffic? Are you being properly compensated for the investment you have made for someone else's convenience?

The ANN plan is looked upon as something some distance in the future as far as standardization is concerned. If you have 2L5N at the present time we see no reason to change it in the immediate future unless it would result in savings for your company. Additional central office designations in your numbering plan area can be obtained by using ANN for codes which are not adaptable to 2L5N.

Perhaps you wonder why the Bell System sponsored 2L5N for the past several years and now appears to recommend ANN. We certainly are not going to answer for the Bell System, but it seems to us it has been quite logical. At the time DDD was started a standard numbering plan was recognized as essential. Millions of Bell System telephones had 2L5N numbering — and it was, therefore, more economical to change others to 2L5N than to change 2L5N to something else. We don't recall that the Bell System ever said that anyone else must use 2L5N numbering — unless the someone else wanted to be-

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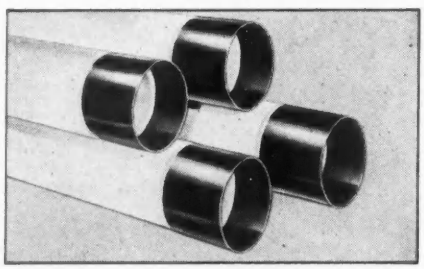

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come a part of the DDD system.

There has been tremendous growth since the advent of DDD, which in turn has meant the establishment of additional central offices. In some rapid growth areas it has already forced the creation of additional numbering plan areas. Since the "1" and "0" on the dial are the only numerals without letters they are the second digit of all Numbering Plan Areas — and there are only 152 of them available.

The growth which causes additional central offices forces the use of additional Numbering Plan Areas or the enlargement of such areas by providing additional central office codes. It seems obvious, therefore, that the immediate solution to the problem is more central office designations, for a very simple reason — if it isn't done that way it means either four digit area codes or eight digit subscriber numbers. The only satisfactory way to provide the additional central office codes is through the use of All Numeral Numbering.

None of this, of course, makes anyone who changed from all numeral numbering to 2L5N exactly happy. We don't blame anyone for being "miffed" under such circumstances and being critical of the Bell System for being a little shortsighted. In all fairness, however, we would be forced to ask if you foresaw what would happen and whether you brought this to the attention of the Bell System. We would suggest that if the record is clear that you had a compatable All Numeral system that was changed to 2L5N to tie in with nationwide DDD and at a future time you must change back to All Numeral Numbering, you would have a pretty good case to discuss with your Bell System Company.

Yes, we think the Bell System made a mistake in going all out for 2L5N numbering — but all that proves is that the Bell System is actually a lot of human beings just like the rest of us. We don't object to people making mistakes. We do object when they persist in such mistakes rather than admitting the error. We also recog-

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PLANT MAN'S 'SPEC' BOOK

(16) Cable Pressurization Procedures — Refrigerator Type Air Dryers

Typical Uses of Meter Panels in Continuous Pressure Feed Systems

For a specific installation, the metering panel arrangement depends on the number of cables to be pressurized initially, the expected growth of the pressure system and cable plant and the specific needs of the particular office.

In general, in the small offices, CDO's, repeater stations, and other similar installations where relatively few cables will be pressurized, an arrangement such as that illustrated in *Figure* 7 is recommended. In this typical installation a meter panel that can accommodate from 3 to 10 cables is wall mounted directly over a Model 750 air dryer. The arrangement is particularly advantageous for those offices where space is at a premium. In addition, the top of the air dryer may serve as a writing surface when recording readings.

Future expansion of the pressure system or additions to the cable plant may be handled by installing duplicate panels either above or alongside the one illustrated.

In large central offices where the initial installation may include a considerable number of toll, trunk and exchange cables and where the pressurizing program may extend over a long period, an arrangement like that illustrated in *Figure* 2 is indicated.

The metering panel in this installation is wall mounted alongside a Model 5000 air dryer. For such offices, individual meter panels may be employed to monitor groups of similar cables, i.e. toll and trunk

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(17) Cable Pressurization Procedures — Refrigerator Type Air Dryers

cables, and groups of exchange cables according to major conduit runs.

Additional panels as they are required may be installed either vertically or horizontally next to those

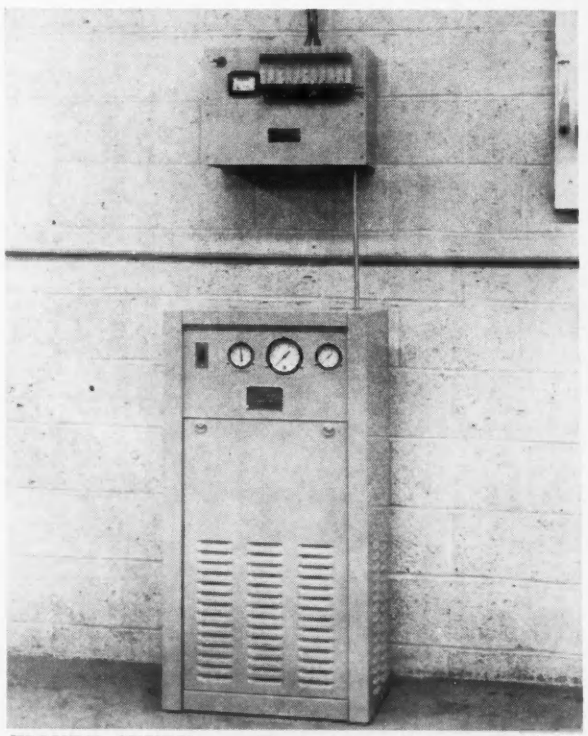

FIGURE SEVEN: — Typical installation of Model 750 air dryer unit with meter panel.

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(18) Cable Pressurization Procedures — Refrigerator Type Air Dryers

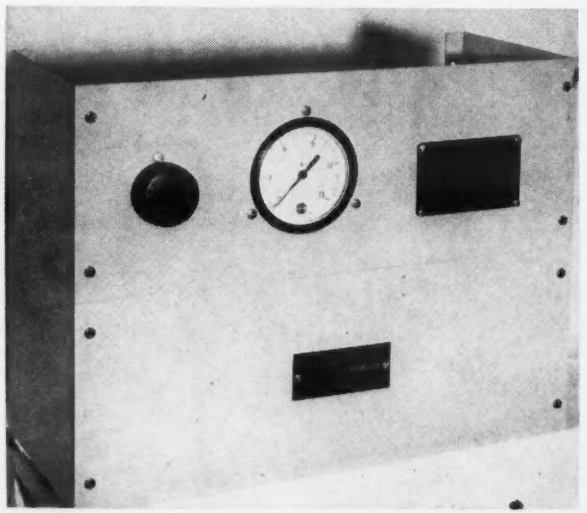


FIGURE EIGHT: — Puregas Dual Pressure Panel.

already mounted and are made an integral part of the installation by means of vertical and horizontal metal strips that lock the whole assembly together.

When it is desired to supply cables with two different pressures as might be the case for aerial cables and underground cables, a dual pressure panel should be included in the installation.

The use of this panel is illustrated in *Figure* 2 (lower left bank of meter panels). Dry air is supplied to the dual pressure panel at 150 pounds pressure directly from the air dryer storage tank and a pres-

More Data For Your "Spec Book" on Page 54.

nize that things which today appear to be mistakes were very good judgment when the decision was made.

In this whole matter there is one thing of very great importance to all traffic people. From here on operators must accept the numbers as given by the subscribers whether they are given as "Alpine 2-6717," "AL2-6717," or "252-6717."— *D. A. Perigo.*

Public Service Tel. Completes $17,000 DDD Project

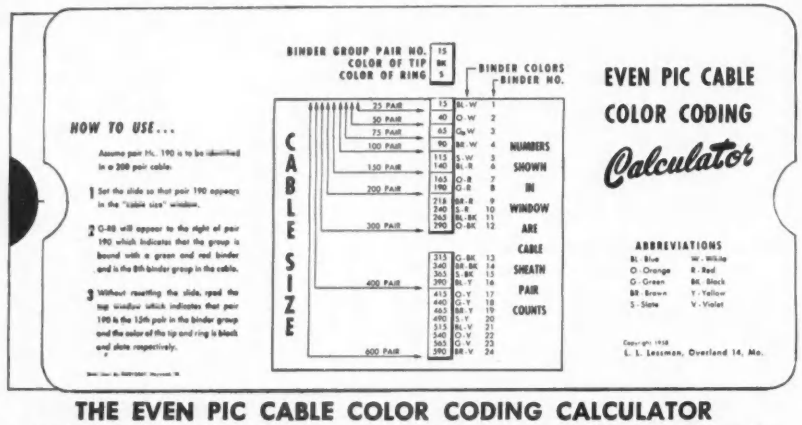
NATIONWIDE Direct Distance Dialing by Montrose and New Lothrop, Mich., telephone users began January 17, according to Mr. W. L. Jennings, president of the Public Service Telephone Co.

The equipping of the Montrose and New Lothrop central switching offices for Direct Distance Dialing was a $17,000.00 project according to Jennings. Also, in expanding plant facilities the company installed approximately 757,000 conductor feet of cable, at a cost of $26,472.00.

At the time Direct Distance Dialing was introduced to Montrose and New Lothrop subscribers, 7-digit, all-numerals instead of 2-letter, 5-digit numbers were assigned to all customers. Jennings stated the two exchanges of the Public Service Telephone Co. are among the first dial exchanges in the nation and actually the first in Michigan to pioneer all numeral 7-digit dialing. Another first permits customers to reach the CAMA (centralized automatic machine accounting) equipment at the Flint toll center, where all out of town calls are switched, by dialing the digit 1 instead of 112, which has been the standard practice throughout the telephone industry, including the Bell System until recently.

New Montrose (Mich.) Tel. Co. office.

According to Gail Person, office manager, 7-digit all-numeral dialing will help to eliminate dialing errors, and dialing 1 instead of 112 will speed up Direct Distance Dialing of many out-of-town calls which will be placed in the future by customers.



THE EVEN PIC CABLE COLOR CODING CALCULATOR

Use this slide-chart Calculator to convert color coding of Polyethylene Insulated Conductor (PIC) cables into cable pair counts, or vice versa. You don't have to have a degree in engineering to operate this device. A housewife, with no knowledge of telephone cable can operate it.

To identify pair #190 in a 600 pair cable merely set the slide-chart and in less than 10 seconds the answer peeps through little windows. Amazing speed! Amazing accuracy too, because the windows are so arranged that only 4% of the data on the cables are shown at one setting.

Don't dig through pages of specifications when you can carry this spec. book in your shirt pocket. Order your PIC Cable Color Coding Calculators today at a cost of $2.00.

slide-chart *Calculators*

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Staff Changes Announced By Anaconda Wire & Cable

RICHARD B. STEINMETZ, president of Anaconda Wire and Cable Co., New York City., has announced the following personnel changes:

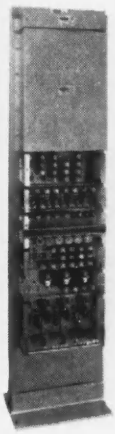
David E. Allen, vice president-sales, has been elected to the position of executive vice president. He succeeds Steinmetz, who was elected president Oct. 21, 1959.

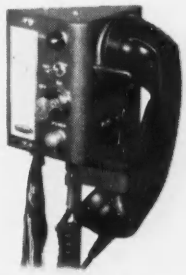
William H. Benton, Jr., formerly general manager of mills, has been elected vice president-manufacturing. Benton succeeds Vito F. Di Lustro, who has retired.

The appointment of two new vice presidents was also announced: *John L. Tindale*, formerly commercial vice president, has been advanced to the newly-created position of vice president-marketing and sales; and *Henry V. Van Valkenburg*, until now general sales manager, has been elevated to vice president and general sales manager.

Typical installation of General Electric mobile telephone instrument and control unit. You can boost the profits of your company with installations like this for your customers.

Dial exchange MTS instrument and control unit.





Manual MTS control unit.

Dial exchange MTS terminal.

Increase profits ❹ ways with G-E MOBILE TELEPHONES from Graybar

Your company can make extra profits on mobile telephone service. Your investment in equipment, for example, can be returned to you in only five years with as few as 50 subscribers.

Mobile telephone service already is working wonders in businesses such as trucking, cabbing, construction, highway maintenance, ranching and in numerous fields of public service.

Here are 4 packages of General Electric mobile telephone equipment that will turn investment into net profit for your company.

❶ **DIAL EXCHANGE MOBILE TELEPHONE SERVICE** . . . A service for telephone companies with automatic exchanges. All automatic terminals wired and equipped for 50 subscribers.

❷ **DIAL EXCHANGE MOBILE TELEPHONE SERVICE FOR AUTOMATIC BILLING** . . . A setup that features completely automatic identification for ticketing in addition to standard automatic mobile telephone service features.

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❹ **INTRA-SYSTEM SELECTIVE CALL** . . . A standard dial is provided in the vehicle as well as the station, and allows the user to call one, a group, or all mobiles on his system.

IMPORTANT PLUS . . . *General Electric mobiles and terminal all are compatible with Bell MTS systems.*

These up-to-the-minute General Electric mobile telephone systems are available from Graybar nationally. You'll find them representative of the wide selection of modern communications equipment we offer.

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(19) Cable Pressurization Procedures — Refrigerator Type Air Dryers

sure regulator on this panel enables the pressure to be adjusted to the level desired, normally 10 pounds for underground cables. From the dual pressure panel, dry air at this pressure is fed to the meter panels directly above.

The right bank of meter panels in this illustration are supplied with dry air at 7 pounds pressure for aerial cables, the pressure being controlled by the pressure regulator on the air dryer unit.

Location of Meter Panels

In offices with cable vaults, the meter panel should be located outside the cable vault for the following reasons: (1) Space is needed in the cable vault to provide complete flexibility of cable rack arrangements, (2) wall space in the vault is usually at a premium, and (3) a location outside of the vault permits a more convenient and accessible grouping of panels.

In vaults with a single conduit entrance, the meter panels should preferably be placed near the conduit end to permit using the shortest possible lengths of tubing between the panel and the various cables. This may result in locating the panel some distance from the pressure source but excessive drop in pressure can be overcome by using a large copper tube between the pressure source and panel.

If the vault has two large underground duct entrances, consideration should be given to locating a meter panel near each of the duct entrances to avoid excessive pressure drops in long tube runs to the individual cables.

In offices without a cable vault, the meter panel

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(20) Cable Pressurization Procedures — Refrigerator Type Air Dryers

should be placed in a convenient location, as close to the conduit entrance as is practical to allow for the shortest runs of tubing from the panel to the individual cables.

Tubings and Fittings for Meter Panels

Soft copper tubing is used between the pressure source and the meter panel. The size of the tubing employed varies between one-quarter inch to one-half inch outside diameter depending on the distance between the pressure source and meter panel and the volume of gas to be handled. In general, three-eighths tubing is used with the Model 750 & Model 1500 Puregas air dryer and one-half inch tubing with the Model 5000 air dryer.

Polyethylene tubing is recommended for piping the gas or dry air from the meter panel to the individual cables. One-quarter inch outside diameter tubing of this material is suitable. It is available as a single tube or in bundles of 3, 5 or 10 color coded plastic tubes covered by a black vinyl sheath (*Figure* 9). This tubing is chemically resistant, compact, light, easy to handle and bend, and in addition is virtually maintenance free and simple to install.

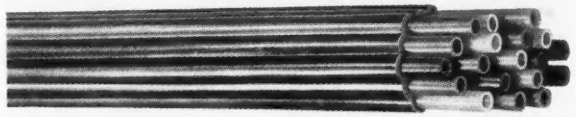

FIGURE NINE: — Plastic tubing handle used in fittings to bring dry air into individual cables in a vault.

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(21) Cable Pressurization Procedures — Refrigerator Type Air Dryers

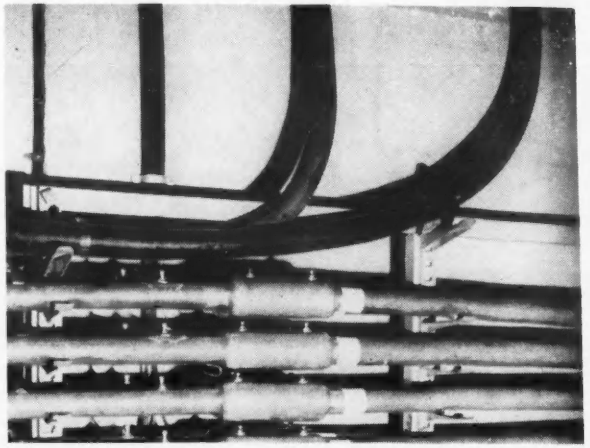


FIGURE TEN: — Use of plastic tubing and brass.

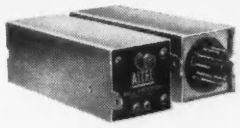
Brass fittings especially designed for use with the plastic tubing are provided with each meter panel. These fittings are leakproof and are easily installed without requiring special tools. The fittings consist of male connections for attaching one end of the plastic tubes to the meter panel and male elbows for connecting the tubing to the cables after the elbows have been threaded and soldered into the individual cables.

Figure 10 illustrates a typical method of connecting the dry air supply to individual cables in a vault by means of the plastic tubings and fittings.

More Data For Your "Spec Book" In The Next Issue.

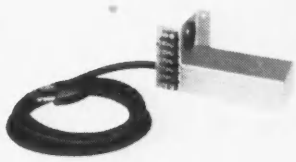
Get on the Altec line for dependable telephone equipment

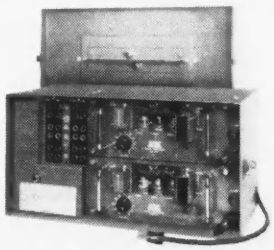
FOR THE BIG GAIN in performance, dependability and servicing ease, check the Altec line of telephone amplifiers and equipment. Precision engineered to meet the most exacting specifications of the industry, Altec products are compact in design for minimum use of space, versatile in application, outstanding in quality and reliability. Check Altec for your needs in today's most advanced telephone and paging equipment.



The 447-A Amplifier is the exact equivalent of the vacuum tube type repeater and its gain, power handling capacity, frequency response, plug-in features and physical size are identical. The drain from 20 volt source is also made identical at 50 ma by the addition of a bleeder resistor to the basic amplifier. It does not require the 130 volt supply needed with the vacuum tube type repeater. For detailed information write for Altec Lansing Bulletin #12966-2.

The 533 Power Supply is designed to fit within a 105-B Apparatus Box. The power supply bracket includes the required socket and space to mount a single ALTEC transistorized repeater type 449, 450 or 453-A and, at reduced power, the 447-A. Operating from 117 volts AC the unit delivers 20 v at 25 ma. Write for Bulletin #13132.





The S-17 Amplifier System is designed for the highest quality program transmission over telephone circuits. A single portable and rack-mountable housing contains two (2) amplifiers and accessory jacks and equalizers so that two (2) complete circuits can be maintained without cross talk. Write for Bulletin #12835.

For complete information about ALTEC telephone and paging equipment write to address below or call PRospect 4-2900.

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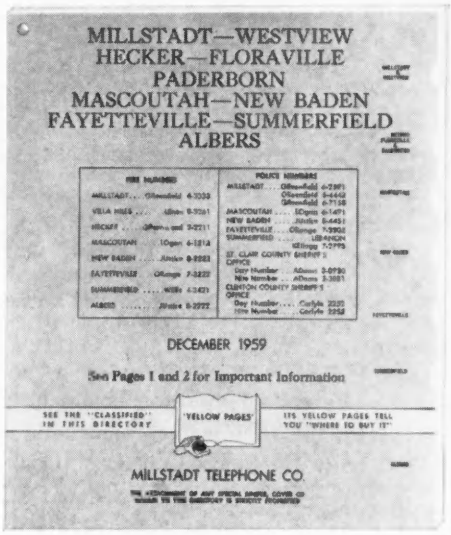
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See Pages 1 and 2 for Important Information

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We have always subscribed to the policies announced above. If any of our sales personnel have violated these policies in the past, we sincerely apologize. Any future statements, representations or conduct in violation of these policies by anyone representing our company or selling our products should be reported directly to me.

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PLANT NOTES ON NEW DEVELOPMENTS

by JOHN S. REED

Air-Acetylene Torch For Cable Work

In this issue Mr. Reed discusses (1) a soldering torch for cable maintenance work; (2) mobile "wire centers" for emergencies; and (3) an extension relay ringing unit for auxiliary signaling

Soldering Torch for Cable Maintenance Work

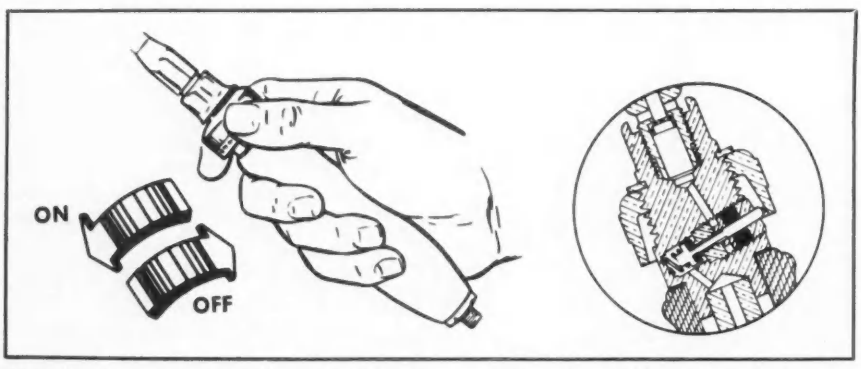
AIR-ACETYLENE torches have an important application for cable repair operations. The sheath of lead-covered cable is easily damaged in various ways as by squirrels, bullets, climber gaffs, ring cuts (in ring- supported cable), unequal tension and vibration, the latter two causing sheath crystallization.

The usual procedure in repairing such damage is to clean and brighten the affected areas in the cable sheath with a carding brush or shave hook, apply stearine as a fluxing agent and heat the areas with the air-acetylene torch. Standard solder is added and flowed onto the damaged areas under heat to produce a smooth surface.

A soldering brazing torch that is well suited to cable maintenance work is illustrated below. The size of tip to use depends on the amount of heat needed for the job. The No. 3 tip is considered satisfactory for most cable repair applications.

JOHN S. REED, TE&M's technical editor, is plant methods supervisor, Lincoln (Neb.) Telephone & Telegraph Co.

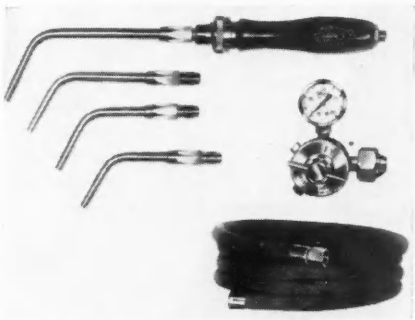
The air-acetylene flame produced by this torch has a temperature of about 4000 degrees F. This temperature is adequate for flowing solder over damaged areas in the cable sheath in extensive repair work.



Showing how poppet valve of soldering torch is operated by twist of ring on handle. This valve is stated to be trouble free.

The torch has an all position poppet valve in the handle which operates by a simple twist of a ring on the handle. This on-off control feature is available in any position of the handle and thus assures a correct working position for the burner tip. The operator does not have to go over to the tank to turn it off or on.

The regulator is necessary to prevent building up of tank pressure in the hose. This regulator assures even flow and steady flame without unnecessary adjustment of the tank valve. Adjustment is made to obtain a good flame with light blue inner core.



Mecco Super "Jiffy" soldering torch with all-position roller-action poppet valve in handle. Also shown are additional burner tips, Type "S" acetylene regulator, and hose used with the torch. *(Modern Engineering Co., Inc.)*

Two sizes of tanks are available for use with the torch illustrated, the type B (40 cubic feet) and MC (10 cubic feet).

Mobile "Wire Centers" For Emergencies

MOBILE "wire centers" housed in "highway vans" to serve the urgent communication needs of mushrooming communities are being used by the Illinois Bell Telephone Company. The moving centers, used temporarily in lieu of permanent offices, are also seen as a possible effective means of quickly restoring service in disasters, such as a severe storm.

The mobile units were first put into use in Michigan in 1955 and many such units are now being developed and manufactured by other companies throughout the United States.

The need for the wire centers on wheels came about when recent

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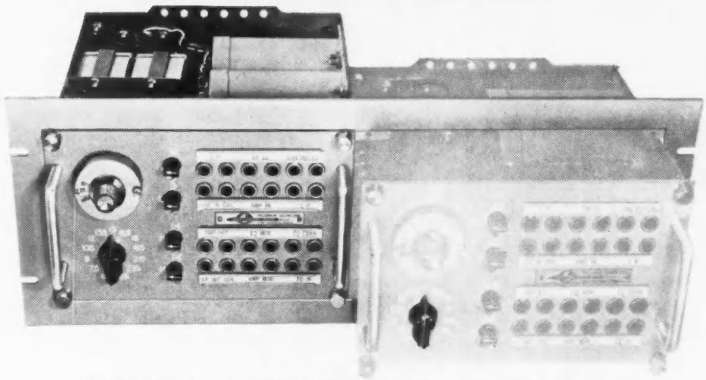

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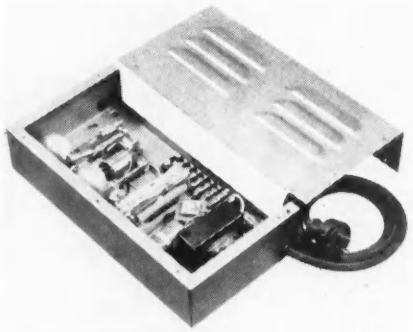
growth in suburban areas and springing up of whole new communities resulted in heavy demands for quick telephone service beyond normal periphery areas. The demand exceeded available equipment and facilities despite repeated expansion and held orders for telephone service accumulated in many locations. An important requirement for meeting these orders was additional wire centers or central locations for switching equipment. There was a necessary time lag between the setting up of such permanent centers and fulfilling the service needs of the community. While central offices were being built, or else to defer their construction until required materials and facilities were available, mobile units were introduced to expedite the furnishing of basic service when and where the customer wanted it.

In designing the mobile unit, engineers had to discard previous concepts of central office design. They succeeded in condensing and compressing a switching system with a capacity of nearly 1,000 lines with great flexibility and at the same time, extreme simplicity. The center, as designed in Illinois, is housed in a trailer 40 feet long and 8 feet wide with a ceiling height of 8 feet 7 inches. These mobile units are designed to be replaced by permanent central offices of larger size and the trailers will be rolled away to another location.

Extension Relay Ringing Unit For Auxiliary Signaling

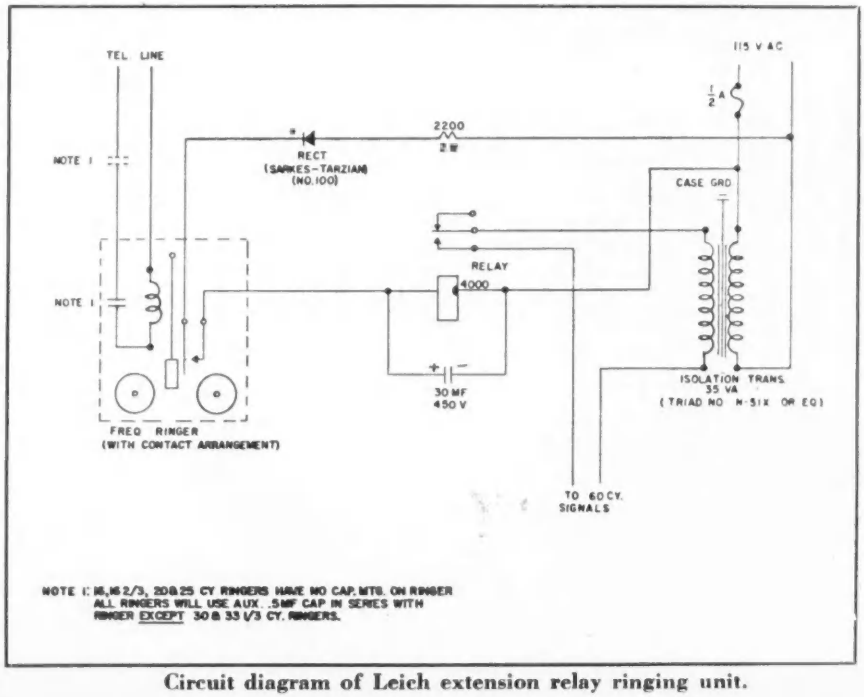
THE EXTENSION relay ringing unit shown below provides an extra ringer for lines on which the maximum permitted number of ringers has already been installed and operates signals, bells, gongs, or horns, using 110 volts, 60 cycle AC



Extension relay ringing unit. This illustration shows the traffic type telephone ringer relay and isolation transformer with cord and plug. *(Leich Electric Co.)*

as the power source. Unit consists of a traffic type telephone ringer, a relay, and a one-to-one isolation transformer connected as indicated in the diagram. These components are housed in a metal box, measuring 12″ x 6″ x 2½″ with a cord and plug for connecting to a receptacle.

The traffic ringer responds to the



Circuit diagram of Leich extension relay ringing unit.

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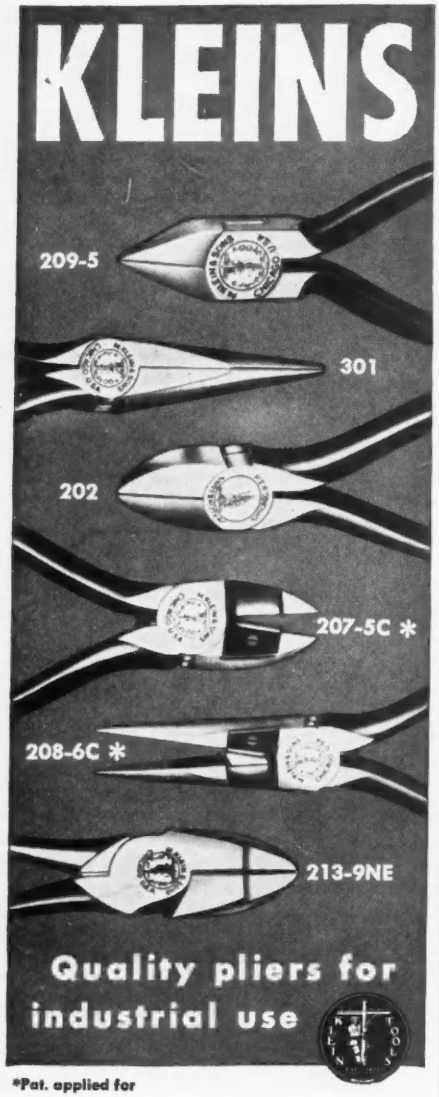

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proper ringing current from the central office, thus acting as a ringer, or actuating certain types of signals. It operates a slow release relay to close the circuit to bells or other types of 110-volt signals. These signal units should not have a power consumption greater than 35 watts; otherwise an auxiliary power relay should be used to close the circuit to a higher wattage signal device.

Among applications for the ringing unit are use in conjunction with operation of extension loud ringing bells and the control of fire alarm sirens. These sirens can be operated by dialing a special telephone number to actuate the ringing unit which in turn closes the circuit to the firm alarm equipment.

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Written primarily to convey management information, the newsletter does not contain advertising, feature articles, or new product news. Subscription rate for this monthly newsletter is $12.50 per year. A free sample copy is available upon request from *Electronic Information Service*, 8526 — 11th *Ave. South, Dept. TE&M, Minneapolis* 20, *Minn.*

You are invited . . . to tell our authors about problems on which you'd like to have an opinion.

QUESTION: — *Why is a special type of wrench needed for installing splice cases and splice case terminals on cable? Won't the regular socket wrenches do the job?*

ANSWER: — Splice cases make use of a number of bolts to effect the necessary closure of the two halves of the case over a bead of sealing compound running around the edges of the casing halves. Tightening with regular socket wrenches can cause excessive stresses in the cases and bolts with resulting damage. The use of a small limited torque type wrench will avoid this trouble. This wrench is adjusted to exert only the needed torque or twisting force to tighten the bolts to the proper degree, after which it slips. The wrench should also be a ratchet type to facilitate the installation of the bolts. Such a tool is the "B" ratchet wrench which is 3 3/4 inches long, weighs 2 ounces, and is designed to take 7/16 inch hex head bolts. It may be obtained through your regular supplier.

QUESTION: — *Why would it be desirable to construct cable leads with long spans? Wouldn't there be more trouble caused by having long cable spans that vibrate in windy locations?*

ANSWER: — We have been informed that there is less maintenance involved in cable leads with long spans than those with shorter spans. It seems that there is less bowing or waviness of the cable. Also most cable sheath troubles occur near the poles and, with fewer poles in the lead, there is a corresponding reduction in the number of trouble cases from this cause. Construction costs are, of course, somewhat lower where there are fewer poles to place. As for vibration troubles, these occur mostly

as the result of light-weight cables (plastic-jacketed) being placed. Cable dancing or jumping in winds can be effectively prevented by twisting alternate cable spans around the messenger in locations of such vibration.

QUESTION: — *Would you please explain the significance of "E" and "M" leads as used in carrier circuits.*

ANSWER: — The E and M leads are old time designations, which apply to that part of the circuit which transmits signaling via a different path from that used for the telephone conversations. The E lead is for receiving dial pulses and supervisory signals and the M lead is for transmitting the pulses and signals. In the case of simplex and composite circuits, the dialing or signaling equipment operates over a ground return circuit. For carrier, a special frequency is employed for transmitting the dialing and signaling currents.

QUESTION: — *How can high humidity be reduced in a central office?*

ANSWER: — The use of a dehumidifier will materially reduce the moisture content of the air in the building. A refrigerant type dehumidifier is good when the minimum desired humidity is 50 to 60% and the moisture collected can be directed into a drain. For lower humidity (down to 10%), it is necessary to use an absorption (dessicant) type dehumidifier. The latter unit makes use of an electric heater to remove the moisture from the dessicant to reactivate it. The vapor removed is vented into the outside atmosphere.

EDITOR'S NOTE

Got a problem?? Write it down and send it to John S. Reed, Technical Editor, "Telephone Engineer & Management," 7720 N. Sheridan Rd., Chicago 26, Ill. We'll do our best to give you the correct answer.

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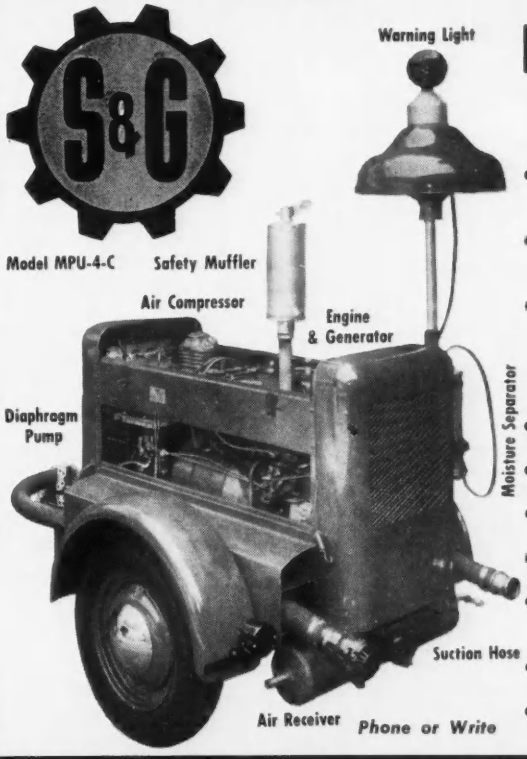

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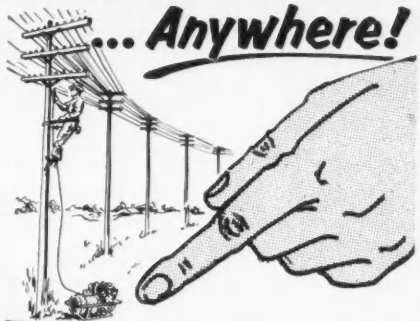

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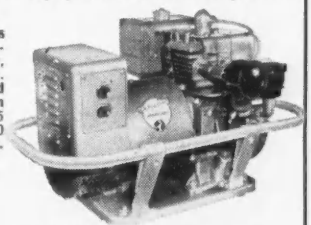

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JOHN ORR, left, Hillsborough's general manager, and A. J. UNGERLEIDER, SBC sales representative, watch as an IBM accounting machine provides a breakdown of intrastate and interstate tolls.

How To Mechanize Billing Procedures Without Investing In Machines Or People

Here's how one fast-moving Independent — Hillsborough & Montgomery Telephone Co., Belle Meade, N. J. — completely mechanized its billing procedures without investing in machines or people.

THE Bell System's rapid conversion to operator mark-sensed IBM card toll tickets is bringing high-speed punch card accounting within the reach of hundreds of Independent telephone companies. Many of these firms are now taking active steps to mechanize their billing procedures completely.

Some telephone companies are planning to install punch card accounting machines and to hire the skilled personnel to operate these machines. Hundreds more, however, have a volume of toll tickets that is too small to warrant the capital investment necessary to set up a machine installation. Yet these firms are faced with the same problems of manual ticket sorting, preparation of traffic volume counts, peg counts, and other statistical studies and analyses as the larger companies. Is it possible for them to benefit from punch card accounting techniques?

Based on the success story of one fast-moving Independent, Hillsborough & Montgomery Telephone Co., Belle Meade, N. J., punch card accounting is available to all. This firm has completely mechanized its billing procedures — without investing in machines or people — by having its data processed at the East Orange, N. J., branch of The Service Bureau Corp., a nationwide subsidiary of IBM.

Here's how the system works:

Each week the nearby Bell toll center provides Hillsborough with the mark-sensed punched toll tickets. These are then forwarded to the East Orange SBC branch office. At this time, Hillsborough also supplies source documents indicating charges to subscriber accounts for collect calls that originated at other toll centers, credit card calls, additional service charges, and directory advertising charges.

The information from these source documents is then key punched into

IBM cards. Cards are then listed by an accounting machine to obtain a control amount, card count, and a breakdown of intrastate and interstate totals. The latter totals are forwarded to the Hillsborough business office to enable the office to file this information in the monthly government reports.

Each month, all toll tickets are accumulated and sorted by date and telephone number. The same cards then are listed on the toll statement forms for each subscriber. As each subscriber total is accumulated and printed on the toll statement, a card is created establishing the total for the purpose of calculating the 10% federal tax.

The new total cards now contain the total toll charges for each subscriber and the applicable federal tax. Each month the total cards are collated mechanically with the subscriber's name and address card, previous balance due card, monthly service charge card, additional services charge card and directory advertising card.

MISS KATHLEEN G. RYAN, an SBC key punch operator, explains to JOHN ORR how charges to subscribers accounts for collect calls, additional service and directory advertising are key punched into IBM cards.

At the firm's business office, MRS. FRED MALCO withdraws the accounts receivable cards from the file as each payment is received. The cards are furnished in telephone number sequence.

The group of cards described above then will be used to prepare individual telephone statements. Simultaneously, a new accounts receivable or balance due card is created.

The new accounts receivable cards are then interpreted (printed at the top edge showing the subscriber's telephone number and total amount due). Hillsborough then receives the toll statements, telephone bills or statements and accounts receivable

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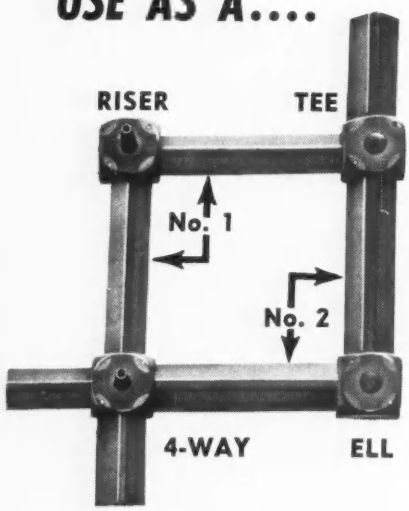

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cards, and the original mark sensed toll tickets.

At the Hillsborough business office, clerks withdraw the accounts receivable cards from the file as each payment is made during the month. The cards are furnished in telephone number sequence. Full payments are entered and the cards are kept in a separate file. Partial payments are entered on the accounts receivable card and kept in a separate file. Unpaids remain in the original file. At the close of each month's business, all three files of accounts receivable cards are returned to SBC for the processing of the next month's bills.

By switching to the SBC punch card system, Hillsborough can extract special reports such as sales analyses, computation of unbilled revenues, and other traffic and accounting studies from the storehouse of information available in punch card form.

A breakdown of state and federal taxes is available quickly. In addition, manual sorting and handling have been eliminated, making possible a savings in traffic costs.

The addition of more customers, regardless of their traffic volume, will not make it necessary for Hillsborough to hire additional clerical help. It will simply mean a few more hours of machine time at the SBC branch office. Under the new system, clerical help has been utilized effectively.

One extra advantage of the new system has been the machine-prepared name and address labels which are issued every six months and are used for mailing telephone directories to subscribers. Previously, these labels had to be typed individually.

Both the manual ticketing and the mark sensing were in effect during the change-over period, and in some cases customers received two toll statements. The system is now completely converted to punch cards.

The machine-prepared bills are completely acceptable to Hillsborough's customers. And, since the bills go out faster, the firm anticipates faster collections. In addition, the company is aware of aged accounts much sooner than ever before.

The larger companies, of course, have successfully proven that punch card accounting provides many benefits. Hillsborough management believes Independents must also adopt these techniques and operate efficiently for a successful future.

Gen. Tel. Announces Formation Of New Research Laboratories Subsidiary

GENERAL Telephone & Electronics Corp. (GT&E) has announced the formation of General Telephone & Electronics Laboratories Inc., a wholly-owned subsidiary which will be engaged in a wide range of scientific research activities in the communications and electronics fields.

In making the announcement, Donald C. Power, chairman and chief executive officer of GT&E, said the nucleus of the research organization will be the Bayside, N. Y., Research Laboratories of Sylvania Electric Products Inc., a GT&E subsidiary. He said that additional facilities are contemplated in the future as the work of the laboratories expands, but that it would be premature to discuss possible new locations at this time.

The GT&E Chairman announced that Dr. Herbert Trotter, Jr., senior vice president — research & engineering for Sylvania, has been elected president of General Telephone & Electronics Laboratories, with headquarters to be established at the General Telephone Building, 730 Third Avenue, New York City.

In addition to serving as chief executive of the new subsidiary, Dr. Trotter has been assigned responsibility for directing and coordinating in a functional capacity the research and engineering activities of the various manufacturing subsidiaries. These include Sylvania, Automatic Electric Co., Leich Electric Co., Lenkurt Electric Co., Inc., and various international manufacturing companies.

"The mission of this new research

DR. HERBERT TROTTER, JR.

organization will be to assure that General Telephone & Electronics is in the forefront of the unprecedented technological progress we foresee in the years ahead," Power stated.

Predicting that expenditures for research and development by industry, the government, universities, and private laboratories will rise to more than $20 billion annually over the next seven or eight years, against $10 billion today, the GT&E Chairman commented: "Every aspect of our economy is becoming increasingly complex, and industry must gear its long-range planning to this trend. We must find entirely new ways of doing things; new and better services and products must continually be developed, to meet the expanding needs of our customers. This requires research and development activities on a sufficiently broad scale to assure significant scientific break-throughs."

Referring to a recently completed study of the over-all GT&E organization's technical personnel and facilities by Lt. Gen. James D. O'Connell, retired Chief Signal Officer of the U. S. Army, Power said that General O'Connell's survey was "extremely beneficial in evolving a program for maximum utilization of our technical resources and capabilities."

General O'Connell, who joined GT&E as a consultant in July, 1959, has been elected a vice president of the Laboratories and will serve as a member of the management organization. Other officers are Dr. Robert

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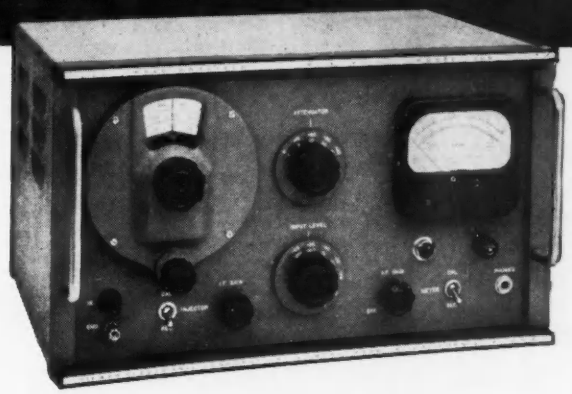

Sierra 121A Wave Analyzer is a double superheterodyne receiver covering 15 KC to 500 KC. It provides data directly in volts and dbm at 600 ohms, and offers high selectivity required for single sideband carrier measurements.

Sierra 158A Wave Analyzer is similar to Model 121A but covers 500 KC to 10 MC.

Both instruments have ±2 db accuracy, spurious response at least 50 db down, and signal measurement range of 77.5 μv to 97.5 volts. Available for either cabinet or relay rack mounting.

Frequency-selective carrier-frequency voltmeters

For carrier frequency and other field or laboratory work between 3 KC and 800 KC, Sierra offers five accurate, stable tuned vacuum tube voltmeters. All are direct reading in voltage and dbm at 600 ohms from —80 dbm to +42 dbm. All feature built-in calibration oscillators, level calibration circuits, aural monitoring jacks, and (except 103B) precision spiral scale dials. All are ruggedly constructed of quality components for long operating dependability.

SPECIFICATIONS — SIERRA VOLTMETERS

Model	Frequency Range—kc	Selectivity		Accuracy		Direct Reading in dbm	
		Down 3db	Down 45db	Frequency	Measuring	Balanced	Unbalanced
101C	20-500	± 550 cps	± 2900 cps	Note A	± 3 db	Note D	600 ohms
103B†	3- 40	± 400 cps	± 3000 cps	± 0.5 kc	± 3 db	Note D	600 ohms
104A	5-150	± 300 cps	± 1500 cps	± 1 kc	± 3 db	Note D	600 ohms
108B	15-500	± 550 cps	± 2900 cps	± 3 kc Note B	± 2 db Note C	135 ohms Note D	600 ohms
114A	100-800	± 550 cps	± 2900 cps	Note A	± 3 db	Note D	600 ohms

† Contains carrier re-insertion oscillator for monitoring suppressed carrier systems. Furnished with planetary drive dial. Note A. Ranges from ± 2 KC at low end of dial to ± 3 KC at upper end. Note B. ± 1 KC in the 48 KC to 256 KC region. Note C. ± 1 db for + 30 db to —40 db attenuator steps on 135 ohm balanced measurements. Note D. All models may be converted for 135 and 600 ohm balanced line measurements by convenient plug-in bridging transformer, Model 130D.

Data subject to change without notice.

Sierra Electronic Corporation

Division of Philco Corporation

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Menlo Park, California, U.S.A.

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PENTA treated top-to-butt for years of added pole-line service resulting in far less per annum costs. Dependable service by a company who has been serving telephone companies for more than 50 years.
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MINNEAPOLIS 3, MINNESOTA

M. Bowde, vice president and general manager; Dr. Bennett S. Ellefson, vice president; Arthur L. B. Richardson, vice president and general counsel; Jacob B. Taylor, vice president—finance; Ralph D. Heusel, treasurer; and H. H. Howlett, secretary. Taylor will continue in his basic assignment of executive vice president—finance of GT&E, Heusel will continue as treasurer, and Howlett as assistant secretary. Richardson will continue as vice president—general counsel and secretary of Sylvania.

The Sylvania Research Laboratories, which currently are located in four buildings on 50-acre Sylvania Center, have a total staff of about 350 persons. The principal research fields are physical electronics, chemistry, solid-state physics, metallurgy, and systems and circuits. Among the specific projects now under way are those involving intensive study and development of new principles of data processing and display, communications, lighting, television and radio, power transmission, semiconductor devices and electron tubes, and related projects.

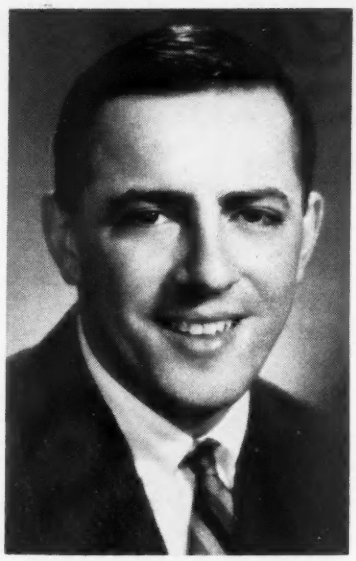
The over-all GT&E organization includes 24 laboratories and about 3,000 scientists and engineers, exclusive of technical personnel in the telephone operating companies. The research and development activities at various levels of the organization represent the expenditure of some $20 million annually, exclusive of the many projects being undertaken for the government.

Ray Geraci Joins TE&M As Promotion Manager

RAY GERACI, 32, former promotion director of the Chicago Cardinals football club, has joined Telephone Engineer Publishing Corp., Chicago, as promotion manager, according to an announcement by Roy F. Smith, president of the corporation.

Geraci, a 1951 graduate of Lake Forest (Ill.) College, started his career in 1952 as director of publicity at the college and editor of the Lake Forest *College Alumni Bulletin*.

In 1954 he joined the Chicago Cardinals as promotion director. In



RAY GERACI

this capacity he edited the club's publication *The Big Red*, and directed and edited an annual 30-minute sound motion picture presenting the outstanding plays of each season. He also organized a sales program for season tickets among business firms in the Chicago area, and was coordinator of the club's scouting system.

Geraci and his wife, the former Ruth Ann Smith, and their three children, Marc, Ray Jr., and Laura Ann, live in Highland Park, Ill.

Jackson Succeeds Reese At Gen. Tel. Service Corp.

IRA B. JACKSON, long-range planning engineer with General Telephone Service Corp., succeeded Frank D. Reese as director of engineering for the corporation, on January 1, according to an announcement by Walter G. Wright, vice president — operations, General Telephone & Electronics Corp.

On January 1, Reese became president of General Telephone Laboratories, Inc., Northlake, Ill.

Jackson graduated from Purdue University with a B.S. degree in electrical engineering.

After serving with the Indiana Bell and Wisconsin Telephone Companies, Jackson joined General System in 1945, when he became general plant engineer at the System's predecessor Indiana company. He was promoted to chief engineer in 1950, and in 1958 he was transferred to his present position in New York.

COMMUNICATIONS SECURITIES

Markets as of February 1, 1960

	DIVI-DEND	BID	ASKED	LAST SALE
American Tel. & Tel.	$3.30			80⅞
Anglo-Canadian Tel. (Brit. Col. & Dom. Rep.)	1.20	33½	34½	
Bell Tel. of Canada	2.20			45¼
British Columbia Tel.	2.20	44¼	44¾	
Calif. Interstate Tel. (Calif., Nev.)	.70	13¾	14¼	
Calif. Pac. Util. (new) (Calif., Ore., Nev.)	.90	20½	21½	
Calif. Water & Tel.	1.28	27	27½	
Carolina Tel. & Tel. (Carolina)	1.60	38	—	
Central Elec. & Gas (Minn., Ill., Ia., Wis., Va.)	1.00	23¾	24	
Central Telephone (Minn., Ia., N. C., Va.)	.88	22½	22¾	
Chenango & Unadilla Tel. (N. Y.)	1.20	27	27½	
Cincinnati & Suburban Tel. (Ohio)	4.50	89	90	
Citizens Utilities (Calif., Pa.) "A"	stk only	14½	14¾	
Citizens Utilities (Calif., Pa.) "B"	.52½	12⅜	12¾	
Commonwealth Tel. Co. (Pennsylvania)	.90	18¾	19½	
Florida Telephone Co.	1.00	26½	27½	
Gen. Tel. & Electronics	2.20			76½
Hawaiian Tel. Co. (Hawaii)	1.00	20¾	21½	
Indiana Telephone Co. (Ind.)	.50	21½	22	
Inter-County Tel. & Tel. (Fla.)	2.00	55½	58½	
Inter-Mountain Tel. (Va. & Tenn.)	.80	16	16⅜	
Jamestown Tel. (New York)	5.60	80	—	
Lincoln Tel. & Tel. (Neb.)	2.60	62½	64½	
Lorain Tel. Co. (Ohio)	1.40	32½	—	
Middle States Tel. Co. (Ill.)	1.00	25	25¾	
Mountain States Tel. (Ariz., Colo., Mont., Tex., etc.)	6.60	170	171½	
New England Tel. & Tel. (New England states)	1.72			35½
North Carolina Tel. (North Carolina)	none	1⅝	1¾	
Northern Ohio Tel. (Ohio)	1.60	55	—	
Pacific Tel. & Tel. (Calif., Wash., Ore., Nev., Ida.)	1.14			31½
Peoples Telephone (Pennsylvania)	4.00	83	—	
Pioneer Tel. Co. (Minn., N. D.)	1.00+stk	36	37½	
Rochester Telephone (New York)	1.00			24¾
Southeastern Tel. (Fla.)	.90	21¼	21¾	
Southern New England Tel.	2.20	44½	44¾	
Southern Nevada Tel. (Nev.)	1.00	20¾	21¾	
Southwestern States Tel. (La., Ark., Okla., Tex.)	1.20	23	23½	
Telephone Serv. Co. of Ohio "A" (Ohio)	2.80	134	140	
Telephone Serv. Co. of Ohio "B" (Ohio)	2.80	140	—	
Tidewater Telephone Co. (Virginia)	1.40	25	—	
United Utilities	1.40	38	38½	
West Coast Tel. (Wash., Ore., Calif.)	1.20	24	24⅜	
Western Union Telegraph	1.40			47¼
Western Utilities	.36	7⅝	8	
Western Light & Tel. (Mo., Ia., Kans.)	2.00	41	42	

(Source of Market — DEAN WITTER & CO.

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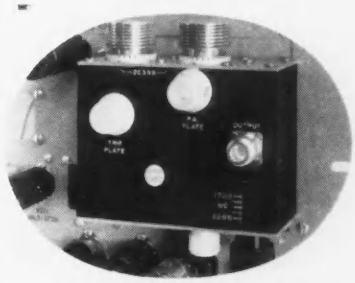

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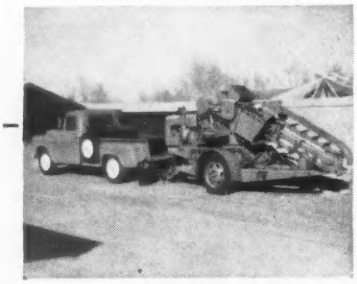
Cable installation at this new housing project was put on production line basis! Crumber on 77 Trenchliner was removed, cable-laying attachment installed — and the 77 laid cable as it opened trench.



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McLean Named Pres. Of Stromberg-Carlson

JAMES D. McLEAN will join General Dynamics Corp. as president of its Stromberg-Carlson Division, it was announced January 14 by Frank Pace, Jr., chairman of the board.

JAMES D. McLEAN

McLean, who will also become a senior vice president of General Dynamics and a member of the corporation's board of management, will assume his duties after February 15.

Formerly president of the Hoffman Laboratories Division of Hoffman Electronics Corp., Los Angeles, McLean will succeed Robert C. Tait, president of Stromberg-Carlson since 1949. Tait, a senior vice president of General Dynamics, will be associated with the corporate office and will assume new corporate-wide responsibilities.

Pace announced also that Allan R. Shilts, controller of Stromberg-Carlson, has been named to the newly-created post of vice president and general manager of the Stromberg-Carlson Division.

A graduate of Massachussets Institute of Technology, McLean holds the BS and the MS degrees in electrical engineering. Previous to his association with Hoffman Electronics, McLean had been for 10 years with the Philco Corp., where he served as commercial manager of Station WPTZ-TV in Philadelphia, and as vice president and general manager of Philco's government and industrial division.

ALLAN R. SHILTS

Prior to joining Philco, McLean had been with General Electric Co. for 10 years as a development engineer and a sales manager.

McLean is a director of the Western Electronic Manufacturers Association and of the Armed Forces Communication and Electronics Association. He is also chairman of the Western Branch of the Military Products Division of the Electronics Industry Association and a national vice president of the National Security Industrial Association. He is a member of the Society of Motion Picture and Television Engineers, American Rocket Society, and American Ordnance Association.

McLean presently lives at Bel Air, Calif. with his wife and four children — Susan, Marcia, Bill and David. He will reside at Rochester, N. Y., the headquarters of Stromberg-Carlson Division of General Dynamics.

Shilts joined Stromberg-Carlson in July of 1959 following two years as controller of the export division of the Chrysler Corp. Before that he was treasurer of the Crown Cork & Seal Co. for two years and had spent seven years as manager of general accounting for the Lincoln-Mercury Division of Ford Motor Co. Prior to these associations, Shilts had been with Price Waterhouse & Co. and Haskell & Sells, public accountants. He is a graduate of Mount Union College, Alliance, O., and holds a master's degree in banking and finance from New York University.

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TELEPHONE MARKET PLACE

(Continued from page 71)

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258		
261	25	2029-SAH and 2048-SR
267	34	2029-SAH and 2048-SFG
269	41	2093-CEA and 2058-CDG
273		26-D
369		261-A

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Plastic Burial Cable 6 pr #16 ga. (stranded) with 1 #12 ga. quad. shielded PVC ins. & jacket wire armor. (sample on request)

Lead. 51 pr #19 ga. plus 4 Video pr. #16 ga. copper shielded) poly eth. ins. (1300 ft only) $750. per M ft.

Special Purpose cable available for immediate delivery at special low prices. Interior & exterior types. Lead, plastic and braid Switchboard cable available at special prices.

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26 pr #19 ga. Neoprene 1400 ft (not coded), $250. per M ft.

101 pr #22 ga. Plastic 1300 ft, $750. per M ft.
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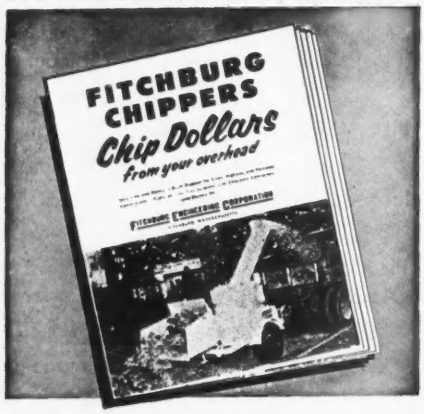

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Ringstad Named Exec. V. P., Copperweld Steel Int'l.

ERLING RINGSTAD, manager of Copperweld Steel International Co. since its inception in 1944, has been appointed executive vice president of Copperweld Steel International.

Ringstad joined the sales department of Copperweld Steel Co. in 1936.

ERLING RINGSTAD

For many years prior to that time he was engaged in transmission and distribution engineering work with Electric Bond & Share Co. in Argentina and New York, and with Duquesne Light Co. in Pittsburgh.

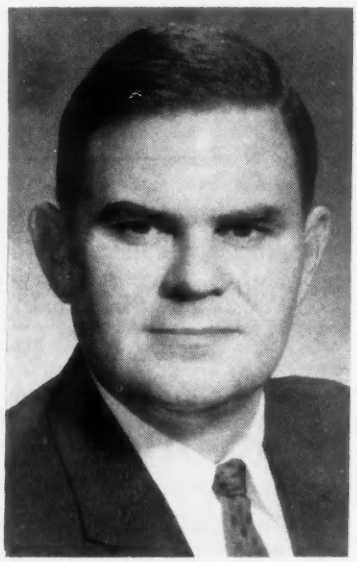
At one time, Ringstad was in the electrical engineering department of Braden Copper Co. in Chile, and with the testing and general engineering departments of Westinghouse.

Copperweld Steel International Co. is the export sales agency of Copperweld Steel Co. In addition to selling products manufactured by the various divisions of the parent company, it also markets allied products of other American manufacturers.

Donald L. Kuntz Joins Communication Equipment & Engineering Co.

DONALD L. KUNTZ has joined Communication Equipment and Engineering Co. as vice president-engineering. He was formerly with the American Telephone & Telegraph Co., New York City.

Kuntz began his telephone career at Rock Island, Ill., with the Illinois Bell Telephone Co. After two years in various plant installation and maintenance jobs, he moved to the transmission engineering staff in Chicago, where he worked for three years engineering exchange and toll cable and carrier plant. In this capacity he was instrumental in instituting improved trunk transmission by use of negative impedence repeaters on



DONALD L. KUNTZ

loaded trunk cables. He also contributed to the economical application of properly loaded fire gauge cable and efficient telephone sets on subscriber loops.

On the AT&T Co. Engineering Staff, Kuntz served in liaison capacity between the Bell Laboratories, Western Electric and the Associated Bell Companies to develop requirements for and to promote use of new transmission systems. He also evaluated non-Western Electric Co. carrier systems.

Truco Turret Derrick

THE new 16-page booklet on the Truco Turrett Derrick has been announced by Truck Equipment Co.

The feather-touch directional controls are all new and for the first time provide a direct mechanical linkage between operator's controls and valve assembly at the base of the boom. This eliminates any creep or sag. solenoid "pops" and unpredicted movements. For your copy write *Truck Equipment Co., 3963 Walnut Ave., Dept. TE&M, Denver, Colo.*

Transmitter

PUBLISHED BY STROMBERG-CARLSON
A DIVISION OF GENERAL DYNAMICS

STROMBERG-CARLSON

News and views of Independent telephone people. VOLUME 8, NO. 11 • FEBRUARY, 1960

Subscribers find 24-carat telephone service in former mining town, Dahlonega, Georgia

"Thar's gold in them hills!"

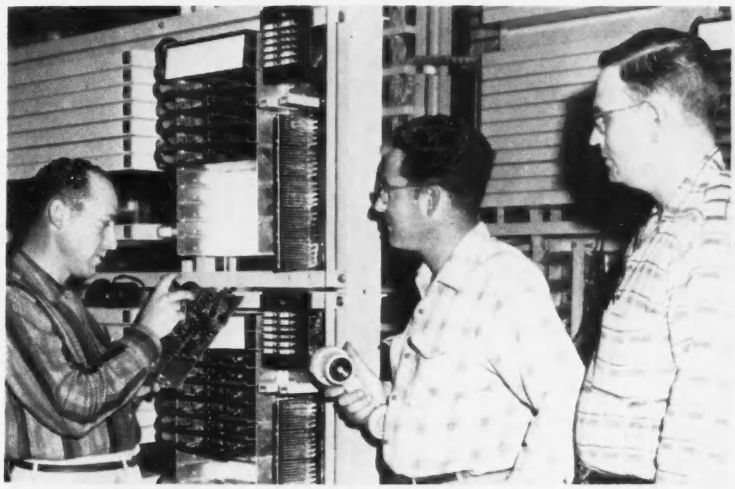
It was 1849, and Dr. M. F. Stephenson was shouting at the disgruntled gold miners milling about him. His vibrant voice rang out from the steps of the Lumpkin County courthouse in Dahlonega, Georgia. He was trying to persuade the men not to leave town. But even as he spoke, small groups of miners gathered their belongings and started pushing westward toward the California strike. His disillusioned audience had soon vanished.

One hundred and ten years later, things looked better in the Dahlonega area. In 1959, the people weren't leaving. They were moving in and staying. The reason wasn't gold — though there is still some to be found.

The slogan of the Standard Telephone Company spells out the answer pretty well — "Serving Northeast Georgia — Where Living is a Pleasant Experience." Now XY® Dial is making that living even more pleasant.

Mr. H. M. Stewart, president and general manager of the Standard Telephone Company, is one of the men who believed in the area's growth potential. He has seen his hopes realized, as more than 5000 upstate residents now subscribe to his telephone service. The Dahlonega exchange is part of the Standard network that serves this scenic area from its Cornelia, Georgia, headquarters.

Nine of the ten exchanges in the system are now operating with XY Dial. Cornelia has its CDO building and is looking forward to cutting over shortly.



Plant station man J. C. Moss gives the familiar XY Switch a fast once-over. Equipment man Phil S. Ragland and general plant superintendent B. J. Barron pay close attention.

Unfortunately, Dahlonega doesn't have enough gold to make mining profitable any more. Commercial mining operations were halted in 1948. But tourists still find panning and digging for souvenir nuggets very enjoyable. Every year hundreds flock into the region to try their luck at "prospecting."

Occasionally someone discovers a nugget with real value. Not long ago, a boy in Dahlonega found one worth more than $150 on the shoulder of a newly built road.

Standing as a monument to days gone by is the administration building of North Georgia College. This structure once housed the Dahlonega mint, which processed one million dollars' worth of gold coins in a twenty-year period. The mint was closed just before the Civil War.

Among the region's scenic attractions is Winfield Scott Lake. It is named for the general who moved the Cherokee nation from north Georgia to the eastern part of what is now Oklahoma. The town name, Dahlonega, comes from the Cherokee word Talonega, which means golden. Even without the precious metal, the future looks golden for the Standard Telephone Company and the growing number who make their home in the Dahlonega area.

Mighty proud of Dahlonega's modern XY Dial exchange is H. M. Stewart, president and general manager of the Standard Telephone Company, which serves the Northeast Georgia area.

This is the sturdy CDO building at Dahlonega. It stands not far from former gold mine sites and is part of the Standard Telephone Company network.

Telephone instrument assembly line:

Now it's even longer

"Doris? . . . yes, she used to sit near me, but now she's at the other end of the line. I don't get up that way very much."

The instrument final assembly line, shown in the first positions above and at the last stage before inspection in lower photograph, is now longer — 50% longer. Individual jobs have been restudied for greater efficiency as well; especially so as to make rapid change-over among any of the 10 standard colors now in demand.

Your orders are their business. L-R, Owen Howk, department foreman; Lawrence Allen, assistant foreman; Lewis Finley, general foreman, assembly section.

The U. S. Department of Commerce predicts that by 1970 there will be 50,000,000 additional telephones in use, a percentage increase exceeding the population growth by about 10%. Independents account for the most rapid new-station growth, and are fully aware of the benefits of merchandising extension phones.

Stromberg-Carlson is very much aware of this, too. 1959 saw telephone instrument sales exceed planned quotas, so the company has taken steps to increase productive efficiency in the instrument final assembly department, as well as in the supporting departments feeding this operation.

STROMBERG-CARLSON TRANSMITTER

People shouldn't drop handsets — but they do! As extra precaution against abuse (left), coil stop is spot-welded to the pole piece of receiver capsule. Preceding this step is meticulous assembly of parts (right). Girls enjoy dust-free, even temperature of specially built room.

Frequencies, like colors, must be stocked to anticipate customer requirements. The ladies whose nimble fingers build up these ringers sometimes have excellent suggestions for improving on-the-job efficiency.

The trained human hand with a "feel" for resonance is still the best way to bring a ringer within the tolerance of a specified frequency. Weight selection and positioning requires expert human judgment.

Handset subassembly line, so planned that a change from one color to another can be accomplished without stopping the carriage belt.

Steady hand, good eye, and a proper light source are needed to make delicate adjustment in spring pile-up for hookswitch assembly.

Completing the mechanical linkage and adjusting keys for the 1575 multi-line telephone. This is bench rather than line job to allow greater ordering flexibility in service requirements and in choice of colors.

These girls talk to themselves! Part of 100% testing procedure is to patch two phones and actually see how they "talk up" under various loop conditions. Other tests are made using meters and scopes for electrical check.

The January issue ended with a promise — the story of how the War of 1812 was won in Mammoth Cave, Ky.

In this engagement the British clamped a blockade on American ports, keeping out needed supplies. One of the most vital was nitrate, necessary in making gunpowder. Nitrous earth in Mammoth Cave suddenly made this region valuable; on a single day, ownership changed hands 3 times, the last sale showing a 3000% increase over the first!

The photo shows the wooden pipes — in almost perfect state of preservation because of the constant temperature in the cave — used in the process of extracting nitrates in 1814. Truly, without this essential to gunpowder, there would have been no Star Spangled Banner waving over Ft. McHenry; Perry could not have won the Battle of Lake Erie. Just another reason why Mammoth Cave draws its thousands of tourists annually. And why it has been good judgment to build an XY Dial exchange serving the National Park operation.

Museum in Nashville is exact copy of ancient Parthenon in Athens — called by many the perfect classical architecture.

Postman's Holiday No. 6

Tennessee

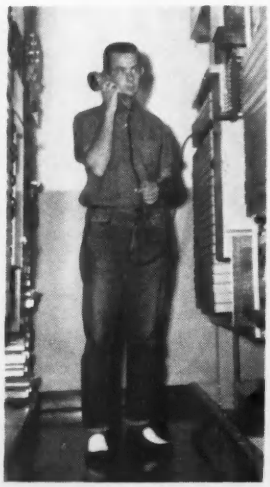
Sam Anderson, manager of the Twin Lakes Telephone Co-op at Gainesboro, Tennessee, points out on map that his company serves all of 5 counties, parts of 4 others.

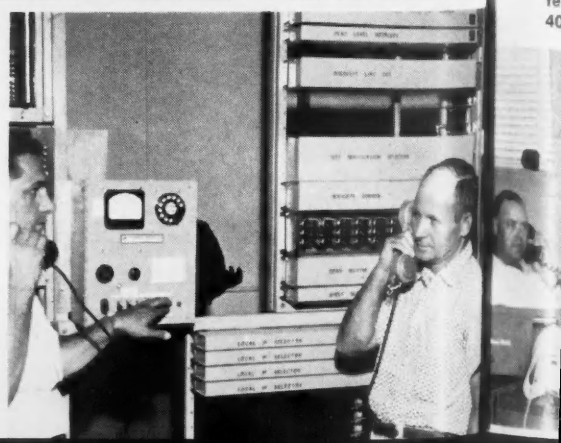
Don't underestimate the power of a 3¢ postcard!

One card, addressed to a Chamber of Commerce in Tennessee, brought twelve replies giving compelling reasons for selecting some particular guest establishment, and extolling the region in general. Could this state — any state — be that wonderful?

Anticipation began building up voltage as we sped south from Mammoth Cave. Interesting names: Eighty-eight, Cyclone, Moss; inviting names: Summer Shade, Kettle, Mar-

At least 1200 customers of the DeKalb Telephone Cooperative, with headquarters at Alexandria, will soon be enjoying a modern telephone instrument for the first time . . . David Dickey, son of owner-manager Cecil Dickey, is plant superintendent at Adamsville . . . Another plant superintendent, Albert Tucker (seated), Steve Hickok and Miss Ward Draper work up a new construction order in Gainesboro plant engineering department . . . Bryna Davis, service order clerk at Alexandria, finds a 1575 multi-line telephone, connected to the company's F-40 XY PBX, provides ultimate in making connections, switching, handling two or more calls at once . . . More power to you! Generator control room of one of world's largest power plants at New Johnsonville. XY Dial PBX keeps vital communication paths open 24 hours. Cheap electricity has drawn new industries to what was a cornfield without a name just a few years back . . . In our stop at New Johnsonville we missed both the general manager, Mr. James Corbitt — leading a Tennessee contingent in summer maneuvers as a Colonel in the National Guard — and Clint Inman, plant superintendent, who was at the XY Training School in Rochester, as shown lower right.





The Hermitage — home of Andrew Jackson when he was 7th President of United States — near Nashville.

is a beckoning land . . . .

Dale Hollow Dam at Celina, one of the towns in the Twin Lakes Co-op group. Built by Army Engineers Corps, it produces 54,000 kw power, backs up a 30,000-acre lake, for recreation and flood control.

rowbone; and a goal — Celina, Tennessee, where Sam Anderson was waiting on the doorstep of his XY Dial exchange building.

"Country ham is the specialty here," said Sam, as we drove up to a neat restaurant overlooking one arm of Dale Hollow Reservoir. This was our first delightful experience with "country" ham, topped off with Chess pie . . . "Lucky people who don't have to count calories" . . . Yes, Tennessee could be that wonderful!

Before the day of huge dams, this state was falling behind in population and in its general standard of living. Young people reluctantly turned their backs on the mountains they loved to seek a job wheverer it could be found. For those who stayed, progress seemed to pass them by. An almost total lack of telephone service as we know it today made isolation in these obscure valleys absolute.

The revolution began in the '30's; has swept the state, gathering force in a cumulative effect. TVA and other dams; cheap power, transportation; jobs in construction, heavy industry, chemicals; secondary industry and a myriad of supporting services; farmland and forest now justifying improvements because the product now had a ready market.

This is the background against which the Twin Lakes Telephone Cooperative has grown to be the largest of its kind in the state, with over 5,000 subscribers. Here, truly, is the essential purpose of the R.E.A., as a force in raising the standard of living where private funds would be inadequate for the job to be done.

Dale Hollow Reservoir, of course, is just one of the reasons for growth in the 4,000 square miles served by Sam Anderson's company. There's furniture, cheese, chicken processing and several garment factories to provide jobs. But the real potential — 70% untapped — is initial service to people who have never had a telephone. As the company builds out to reach them, a new and fuller life begins.

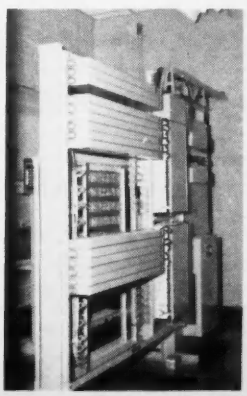
The story is much the same in the *McMinnville* area, served by the Ben Lomand Cooperative. William Slusher is manager here, has his headquarters in the city; but his operation begins at the city line, extending 100 miles north and south, fifty miles east and west. Almost as large as his neighbor to the north, Bill — like Sam — recently lowered his membership fee, and new applications poured in until they are nearly out of lines in most offices. This, however, is no problem with XY Dial equipment.

"Many older people who could well afford service have not yet taken telephones," related Bill, "because they pride themselves on being frugal. But their children think of telephones as a necessity, in the same class as a car or refrigerator. And, once they

Neighbors with a common interest. Mr. E. D. Hildreth, general manager of DeKalb Telephone Cooperative at Alexandria; Mr. and Mrs. William Slusher of McMinnville, where Bill is general manager of Ben Lomand Rural Telephone Cooperative.

Textile and garment factories opening up like morning glories in the warm sunshine. This is one of two large "shirt" plants in Adamsville. Typical order: 500 cartons for a single shipment to a mail order house.

Mr. and Mrs. Cecil D. Dickey of Adamsville. Mr. Dickey entered telephone business right out of high school, owned board switching 40 farmer lines. They now serve well over a thousand . . . McMinnville: another XY PBX installed in new Oster Manufacturing plant . . . also at McMinville, bookkeeping and billing department has been augmented to keep up with growth here.



. . . . and more people are answering the call.

have a phone, these same folk are soon asking for up-graded service."

In addition, the Ben Lomand company has several industries served by PBX systems — one just a few feet within its franchise area!

Growth through acquisition of struggling mutuals — each trying to

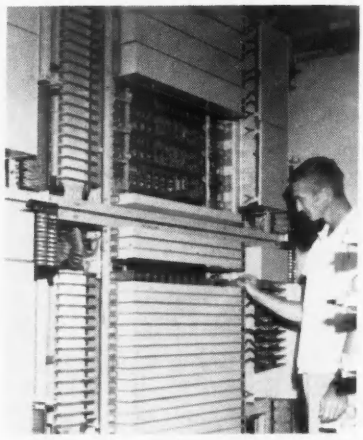
easant, efficient office, friendly and helpful service ave sparked growth of Twin Lakes Company — largest operative in Tennessee.

cut the pie too thin to get a nourishing bite — accounts for the size and strength of the DeKalb Telephone Cooperative at *Alexandria*. Mr. E. D. Hildreth was brought in as manager when the Co-op was started in 1953; his background as an electrical engineer and with construction firms has helped to place the complete modernization program on a firm footing. Woodbury, largest of the ten towns served, completed the 100% change-over to XY Dial service this last November, and brings his subscriber list over the 3,000 mark.

One of his other towns will be having a real boom soon, as a multi-million dollar furniture factory chose a site just 1/10 of a mile inside his service area. This may see another F-40 dial PBX, with which Mr. Hildreth has had good experience — trying it out first in his own headquarters.

Alexandria is not far from *Nashville*. Many commute, following the route we took past Andrew Jackson's "Hermitage." Straight west another 80 miles, a city has sprung — Athena-

Cheap coal, brought in by barge, drives generators at New Johnsville power plant.



Clyde Basham, plantman, at Smithville exchange — one of 10 XY Dial offices in DeKalb Cooperative. Latest to cut over is Woodbury, largest in the system.

like —full grown from a cornfield. Only the latest maps show *New Johnsonville*, on the Kentucky Lake portion of the Tennessee River. But any census of industrial potential has noted the startling development already completed and the equally large plans in the making.

Just 12 years ago, James Corbitt bought a few old magneto phones joined by rusty wire on saplings. It belonged to a distant relative; Jim was persuaded to take it as a favor. Now a single week's revenue equals a whole year's take then. But any telephone man knows that explosive growth is about as exhausting as trying to outrun a tornado.

The original town was named for Andrew Johnson, post Civil War president. The River — an indispensable freight highway now — was equally important then, and its brown waters were dyed crimson in battles between Federal gunboats and the Confederate troops on its banks. The Battle of Johnsonville is the only recorded engagement where cavalry fought the navy — and won.

The present town began in trailers, during construction of the TVA Steam Plant and the DuPont industrial complex. Many still live in trailers, waiting for homes to be built . . . but *everyone* owns a boat for recreation. New Johnsonville is beckoning, and increasing numbers answer this call.

We were sorry to miss Mr. R. E. Thorne, at *Bruceton*. This town —

Home owners in this fine residential section of McMinnville welcome the Ben Lomand Cooperative as a good neighbor and an asset that will increase property values.

Col. Jim Corbitt

National Guardsman, soil conservationist, Tau Beta Pi, church board official, Rotarian, leader of Boy Scouts . . . . busy enough to be a telephone manager! And that he is, at erupting New Johnsville.

nearly wiped off the map by a tornado some years back, just as Mr. Thorne started his conversion to XY Dial — has made a remarkable comeback. Some of its growth is attributable to the same factors that have built New Johnsonville.

Nudging the Alabama-Mississippi border of Tennessee is *Adamsville*. As we approached town, we saw a span of mules plowing . . . "They know where to walk, but I'd have to steer a tractor" . . . and right across from the telephone company was a cotton gin — first we'd ever seen. This town is a center for corn, cotton, soy beans and sweet potatoes (what can't be sold is used as cattle fodder). It is also the doorstep to Shiloh National Military Park. For years Mr. and Mrs. Dickey lived in a Park building, operating the exchange here until it went dial. Life was almost too quiet then!

But Adamsville lives in the present, with two large garment factories, and at nearby Counce a 30-million-dollar pulp and paper mill that will add new jobs for nearly a thousand people. A survey just completed indicates that the present station count will double in the next 10 years. For Mr. Dickey, who began with 40 stations, the rewards of being his own boss have erased the discouraging years when Adamsville seemed to be just another town without much future. Now the future is very much present. We couldn't help but catch the enthusiasm of Mr. and Mrs. Dickey as we said good-bye at the spillway of Pickwick Dam, then sliced off a corner of Mississippi on our way to breath-taking Muscle Shoals.

Lofty Ringgold, Georgia, enjoys down-to-earth telephone service

James Evitt, Jr., left, president and manager of the Ringgold Telephone Company, watches as W. L. Mollands, Stromberg-Carlson Atlanta Branch manager, dials out a test on the "butinsky."

"We're 780 feet high and still in the foothills."

This is Ringgold, Georgia, where the Blue Ridge Mountains stretch skyward close by. Other impressive neighbors include Lookout Mountain, Missionary Ridge and Chickamauga Park.

Historically, Ringgold is well grounded. It was the first town on General Sherman's "march to the sea." Every structure was completely destroyed except for the railway depot and the courthouse. The town started rebuilding a short time later, but the greatest period of growth has come in the past twenty years.

Since 1940, the town has nearly doubled its population. The figure now stands at 1400. With Ringgold leading the way, Catoosa County has also shown a sprinted growth, reaching well beyond 20,000 persons.

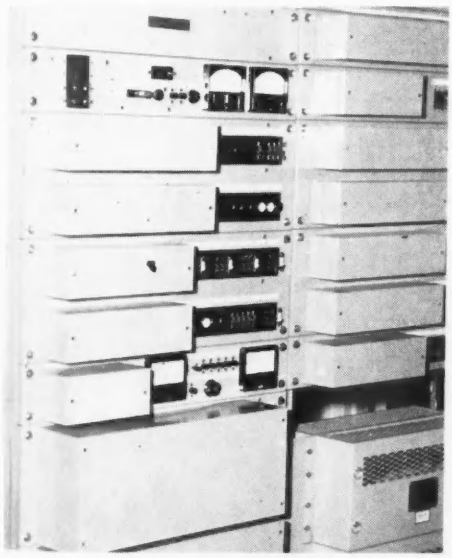
Growing right along with the community is the Ringgold Telephone Company. With Mr. James Evitt, Jr., at the helm, the company has sailed past the 2000-station mark. The new XY Dial equipment recently installed is a good indication that it doesn't plan on slowing down.

Many of the company's subscribers work in nearby Chattanooga, Tennessee, but prefer to live in Georgia. However, Ringgold offers its own fine employment opportunities. Two large rug factories are a big factor in the town's economy.

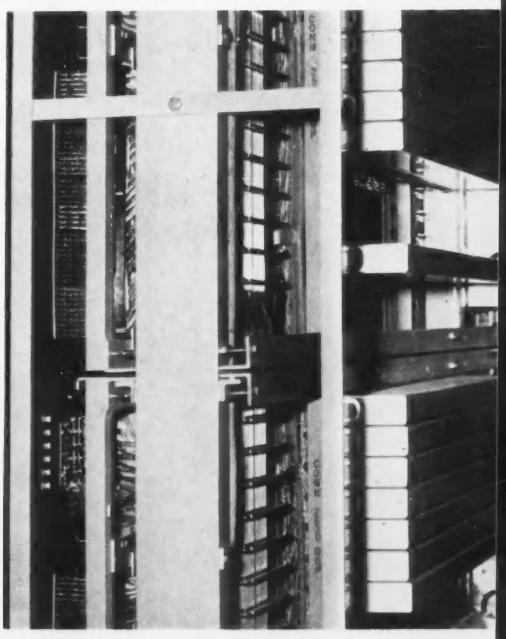
Located on busy U. S. Highway 41, Ringgold is also on the main line of the Louisville and Nashville Railroad. The town operates with a municipally owned water works and sewage system. Three consolidated schools and five churches add a necessary touch to life in the community.

Ringgold has seen good times and bad since its incorporation in 1847. A new and modern charter adopted in 1953 gave the town a better chance to progress. The people of Ringgold aren't going to miss out on that chance.

The late Mrs. Annie Evitt was former secretary-treasurer of Ringgold Telephone Company. In background, l. to r., are R. M. Ward, member of board of directors; James Evitt, Jr., president and manager; T. Grady Head, member of board of directors; W. L. Mollands, Stromberg-Carlson Atlanta Branch manager.



The rugged power board at Ringgold lets plant men know what's going on at a glance.



Compact banks of XY Dial equipment bring top telephone service to the elevated community of Ringgold.

Ringgold CDO building makes impressive appearance. From this structure more than 2000 Ringgold Telephone Company subscribers are served.

Manager, Credit Corp., form progressive team at Industry, Texas

Five years of progress resulted in this new CDO building for Mrs. Clifford Ackley and the Industry Telephone Company.

If you draw a line on a map between Austin and Houston, Texas and then mark off the midpoint of that line, you'll have located Industry, Texas. It's just 75 air miles from each of those cities.

The Industry Telephone Company situated there is well beyond the midpoint of its expansion program. Mrs. Clifford Ackley, manager of the company, has seen to that.

Telephone service was practically non-existent in the community when Mrs. Ackley purchased the exchange five years ago. Since that time things have been constantly improving. In May 1959, Mrs. Ackley entered into an agreement with the Stromberg-Carlson Credit Corp. She has seen that agreement flower into XY Dial equipment which is now serving Industry.

A modern telephone structure to house the dial equipment and business office was the first step in her plan. Then thousands of feet of underground and aerial cable were constructed along with miles of rural pole line. Now Mrs. Ackley has seen her hope for up-to-date telephone service fulfilled.

With such industrious people as Mrs. Clifford Ackley living there, the town of Industry, Texas, seems well named .

Modern XY Dial equipment will now serve Industry, Texas, thanks to cooperative efforts of Mrs. Ackley and the Stromberg-Carlson Credit Corp.

Customers tell us, "It's so easy to install!"

Ten hours each for your two best installers — that's a lot of cost to absorb in the rate structure of a simple key system. Besides it's completely unnecessary, as many companies that have standardized on the Stromberg-Carlson 6K-1 system have discovered.

More and more Independents tell us that easy installation of the 6K-1 pleases them most. It's not surprising, though, because this system was designed with just that in mind.

The Stromberg-Carlson engineer who did major design work on the system made sure of that. His experience was bolstered by more than ten years in the commercial department of an operating company; he knew how installation costs often take a king-size bite out of profits. Ease of installation was one of his first considerations.

Ends power failure worry

But a system like the 6K-1 needs to be versatile, too. This one is. Its many features catch the eye of that hard-to-please subscriber, keep him interested right up to contract signing. The 6K-1 works with a 15-station dial selective intercom, with or without signal flashing. Its power failure circuit lets calls go through even when A.C. power is off, ends subscriber fear of missing an important call.

Manual exclusion can be accomplished by the 6K-1 without sacrificing any trunks — a feature most similar systems cannot offer. An automatic tie-line provides still greater flexibility.

We're always glad to hear from our customers that one of our products, like the 6K-1, particularly pleases them. But, then again, that's what all Stromberg-Carlson products are specifically designed to do.

Subscribers like the 24-hour service the 6K-1 provides. This is particularly important in institutions like the 40-bed Fayette (Ala.) County Hospital, as shown here. Installation was made by the Alabama Telephone Company of Fayette. Mr. W. J. Holladay is company manager and a member of the hospital board.

Transmitter

GEORGE B. FORBES, Editor
J. T. LONG, Associate

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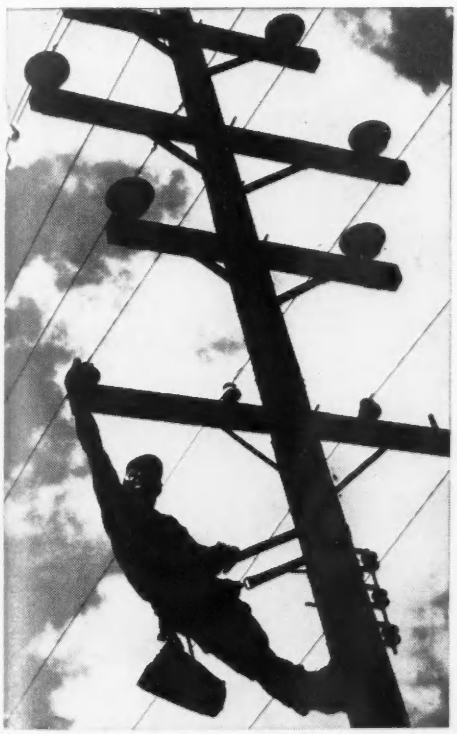
How can you cut down on telephone pole maintenance?



String your lines with USS Tiger Brand Amertel 195.

When you use Amertel 195 to string your rural telephone lines, you get a real bonus. Much longer spans are possible—up to 700 feet. Fewer poles are needed; reducing the time and expense of pole maintenance per mile of line.

Amertel 195 has other important advantages too:

- Longer spans, fewer poles, means lower installation costs.
- Rivers, gullies, valleys, can be strung easily and economically.
- Amertel 195 withstands severe weather conditions, reducing service interruptions. It resists breakage even under heavy ice loads.
- The extra low resistivity of this quality wire assures improved voice transmission efficiency even at relatively high frequencies.

More information is given in our new booklet. For your copy, write to American Steel & Wire, Dept. 0123, 614 Superior Ave., N. W., Cleveland 13, Ohio.

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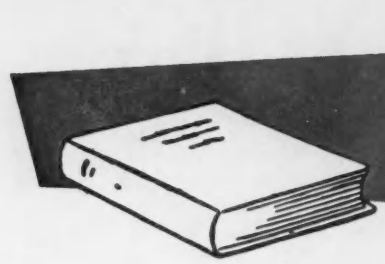


THE BACK OF THE BOOK

By JOHN G. REYNOLDS

It Eats Your Words

SCIENTISTS at Bell Telephone Laboratories are discovering something about you even your best friends haven't been able to figure out — how to read your handwriting!

An experimental handwriting reader recently invented there recognizes only 10 words, "zero" through "nine." But the same methods might be applied to design machines that could read a wider variety of material.

Here's how it works: The writer writes with a metal stylus over a special surface. When he touches a button, a light appears beside the numeral corresponding to the word written. By picking out features of the over-all shape of the word, it explores by machine-reading the shapes of entire words rather than deciphering letter-by-letter.

The device is believed to be the first to read handwritten script — no small feat considering the variations in people's handwriting. The machine can read almost anyone's handwriting providing the writer "plays fair," that is, he must dot his "i's" and must not print nor lift the stylus between letters.

In the telephone industry, reading machines would help in translating toll tickets, in processing telephone company bill stubs and orders for changes in service, and in other commercial applications.

"Speed of Lightning"

WE HEAR a lot of talk about missiles and satellites nowadays. Their speed of 18,000 miles an hour seems fantastic. Yet speed, like everything else, is a matter of comparison, a *Long Lines* writer reminds us.

By direct distance dialing, for example, telephone subscribers can reach a telephone 3000 miles away 20 times faster than our fastest missile could get there. It would take the missile 10 minutes to get there, figuring 18,000 miles an hour, while the number can be reached in less than 30 seconds after dialing.

"New Link"

IN SEPTEMBER, 1959, the first underseas telephone cable from the U. S. direct to the continent of Europe, a joint project of AT&T and French & German communication agencies, was officially opened for service.

During construction huge ice fields once formed off the coast of Newfoundland, blocking the job. Later fire razed one of the two cable ships engaged on the job, and all hands were forced to abandon ship 600 miles west of the French coast. Nonetheless, because of the prodigious efforts of the cable-laying crews to overcome these interruptions, the $40 million link was finished on schedule.

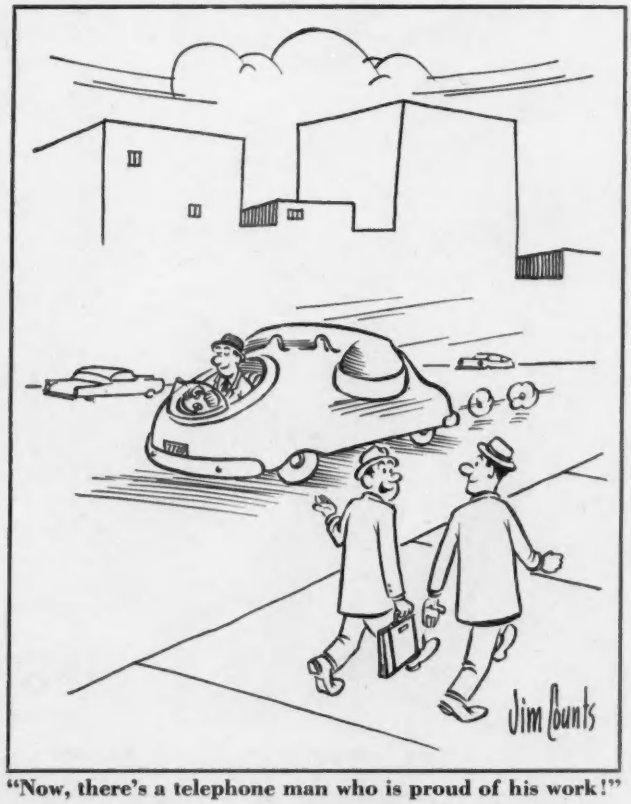
"Mistaken Identity"

LATEST story to reach us from the West Coast concerns a telephone man's son who made a real boner in his science class when the teacher asked *"Can anyone tell me what nitrates are?"* by answering *"I'm not exactly sure, but I know they're cheaper than day rates."*

Royal Lovers

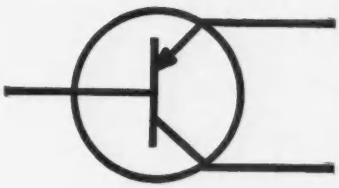
IF IT WEREN'T for the telephone, Japan's Crown Prince Akihito could not have wooed Michiko Shoda, and Miss Shoda would not be the first commoner to become empress of Japan, according to General Tel. of Florida's *Sun Dial.*

They met at the tennis courts, but Japanese custom denied them dates, in the American sense. So . . . Akihito phoned Michiko about 10 times a day, and it was by phone that she said "Yes."



"Now, there's a telephone man who is proud of his work!"

ONLY X CARRIER SYSTEM



Type "X" Transistorized Carriers System offers the following advancements in carrier for use as inter-office trunks on cable or microwave applications:

1. 100% Transistorized equipment incorporating angular modulation with its advantages of AM noise rejection, capture, inherent self-regulation and high signal-to-noise ratio.

2. Operates off 48 VDC which provides power for 12 repeaters as well as power for terminal equipment.

3. Provides modular construction for ease in maintenance with a lock and solder technique for mounting components which assures trouble free service.

4. Gives an 18 DB improvement in signal-to-noise without the extra cost of compandors.

5. Signal units which provide such features as automatic customers release, make busy, timed restoration, individual channel alarms and additional control functions, some of which are not normally available with a cable pair.

6. A new basic repeater design that provides 20 DB gain, preserves cable pair continuity, automatically balances the cable pair, allows use of mixed gauges of cable and is 5" x 1" x 3" in outside dimensions.

7. Competive with cable installation of as low as 7 miles and by the use of "X" carrier for multiplexing, low density microwave systems become economically feasible.

Type "X" equipment with its many advanced features represents the completion of 3 years of development and field testing. Panhandle now offers it on a direct to user basis. For additional engineering information and application assistance contact:

PANHANDLE ELECTRIC SALES, INC.

ANGULAR MODULATED CARRIER SYSTEMS

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1610 INDUSTRIAL COURT ARLINGTON, TEXAS

Let our "Revenue Men" show you

THE NEW POTENTIALS OF DIRECTORY REVENUE

Take a man like
Ray Wilson

Ray is one of our "Revenue Men" in Marion, Ohio.

After traveling across nearly all of the Seven Seas in the U. S. Merchant Marine during the war, Ray returned home and started his career in sales.

It was in 1955 that he joined the General Telephone Directory Company. He first held the position of Sales Representative and then, after achieving a great sales record, he was promoted to Sales Supervisor in Marion in 1958.

He and his wife make their home there now with their four sons and two daughters. Six children keep him busy but when he does find a free moment or two he works for the Cub Scouts, the P.T.A., and the Community Fund.

Ray Wilson is another example of the "Revenue Men" who work for the General Telephone Directory Company—who work for you, who are an asset to any community in which they live.

Are you keeping pace with the trend of increased directory revenue? The potential is enormous. You can't afford *not* to keep pace.

The revenue you earn from a well-sold, well-published directory can give you the highest net profit of any service you sell. Little or no expense is charged against it. And directory profits can make a hefty contribution to total net earnings.

Our "Revenue Men" are trained to help you exploit the rich potential of directory revenue. Backed by our Complete Directory Service Plan, they work with market-tested procedures to tap every source of revenue: local, regional and national.

May we show you a plan tailored to fit your needs? No obligation, of course. Just call or write.

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